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WIN A £1200 laser

See page 58

NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

AMIGA

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Would this make *you* buy an Amiga?

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ATARI'S CD-I SENSATION!

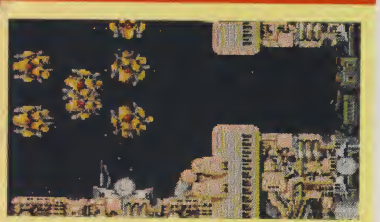
It's the "CDTT"!

Find out why Atari is backing Philips against Commodore

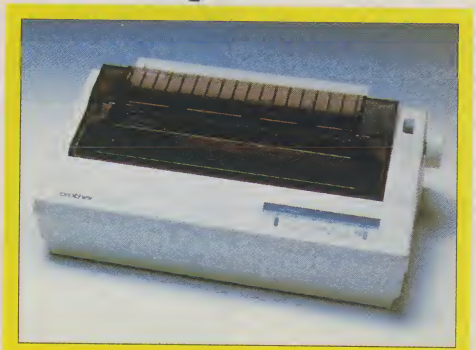
● *But will it be STE compatible?* – See pages 4&5

FAST SWOOPS!
Games pirate is sent to jail

GAMES



R-TYPE II
16-bit ARCADE action



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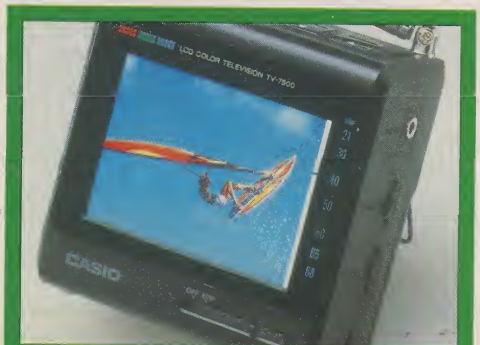

How to use this TV with your computer – p56

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Frontend

What on Earth's happening dude? It's a question that often arises in the fast-moving world of hi-tech widgetry, so here, at Frontend, we lay it all on the line...

SUPERMAN FACES £8,000 PHONE BILL

BT's line security has been slammed as "appalling" by a user of its Dial Plus service after hackers cracked his 'Superman' password and ran up £8,000 on his account.

Video film director George Snow faces ruin if BT insists he pay up and, although he and BT agree his password was hacked, he may still be liable for the full amount because, BT claims, the password was too 'obvious'.

Dial Plus allows customers to connect their computers to international databases for the cost of a local call instead of an international call. Mr Snow used it to connect to the American Compuserve information service. But in January this year unusual activity was noticed on his account - £5,500 worth of it.

"BT was very slow off the mark to realise something was going on," says Mr Snow. "By the middle of February the bill had built up to £8,000."

BT said his password 'Superman' was too easy to guess, but Mr Snow claims BT had advised it was OK and that the hacker or hackers would also have had to guess his 14-digit call line identifier. "This level of security is appalling," he said. "Telecom is not looking after its customers' interests."

A BT spokesman said Mr Snow had been contacted on February 4 and advised to change his password, but it hadn't been done in time to stop the bill. "We have written to him setting out our position and on the surface of it I think we have behaved reasonably," he added.

Mr Snow has since called in Scotland Yard to investigate, but says: "I'll probably be sued for the money and I'll have to fold my firm."

• 'Superman' George Snow faces ruin if BT insists he pay an £8,000 bill run up by hackers.

To get into a database, hackers will try Christian names, or use programs that run through words in a dictionary until one opens a database.

Current customers of Dial Plus have to sign a disclaimer stating they will not use 'obvious' passwords. Mr Snow joined the system before the stipulation came into force. ■

Piracy of the ICs

• High sea drama might take the very DRAMs from your PC as computer piracy takes on a whole new meaning.

Brazil's long coastline is a breeding ground for cyber-buccaneers as numerous merchant ships fall easy prey to raiders looking for micro-chipped booty. And personal computers are a favourite target.

Already this year 20 ships have been attacked in the port of Santos, situated 280 miles southwest of Rio de Janeiro. The authorities believe many more cases have gone unreported.

Rio, the second largest port in Brazil, has also suffered a growing number of attacks.

The method of attack is familiar to anyone familiar with Errol Flynn movies. A grappling hook is thrown on to the ship, the pirates climb aboard, round up the crew and then check for valuables, such as portable or laptop PCs, printers and power packs.

Helcio Muniz, president of the Brazilian Union of Merchant Officers, says: "Pirates like micro-computers and electronic goods because there is a large black market for such goods here. They will steal anything".

So next time you are travelling in South America and see a ship pulling up alongside yours, it might be a good idea to hide your Macintosh. ■

BULLISH BULLETIN BULLION CLAIM

In three years' time there'll be clear-cut millionaires running bulletin board systems – that's the claim of aspirational American bulletin board system operator Jack Rickard.

But UK sysops, who spend their time policing the flow of information to and from BBSs, often for nary a penny profit, are not so sure.

Rickard says: "A few years ago I would be laughed at when I said people could make money at this, but now we have a few who are making money; 50-60 boards doing $3,000 a month."

However, UK journalist and comms expert Gary Whiteley says: "Frankly, I'd like to know how it's done. The level of telephone charges in this country prohibit it and, unless you're running a large commercial service like the Compunet Information eXchange, a BBS will actually cost you money to run."

● Do you run a bulletin board and drive a Ferrari? Thought not. Tell us what you think of Jack Rickard's megabuck predictions. Send your views to 'I wanna buy out IBM', New Computer Express, 30 Monmouth Street, Bath BA1 2BW. ■

AI law

With the rise in computer-related crime, lawyers are hitting back with computerised artificially intelligent case solving systems.

An AI program called *Legal System* has been developed to cut time and money spent deliberating marginal cases. By referring the case to the program, it will match details against the law and against case histories to help reach a clear ruling.

The system was developed on the Mac so computer illiterate lawyers could get to grips with it more easily. However, it won't be in the shops for some years yet. ■

GET REAL! GET REAL! GET REAL! GET REAL!

ON-LINE VIRUS

Over one million residents in Pennsylvania were without telephones last month. And Bell Atlantic, the company which controls the system is blaming a computer virus for the six hour breakdown. Bell is now looking into ways of protecting its systems against digital sabotage.

Windows to video stardom

Microsoft president and video star Bill Gates features in the newly released *Windows at Work*, a 60-minute promotional video for his company's Windows graphical interface.

In his latest role, Bill turns in a sterling performance as a US software house boss pointing out the benefits of Windows 3.0.

With the program already proving a best-seller – Microsoft reports it has shifted almost one million copies in the past year – the video should go down a storm with corporate users of Windows.

One memorable scene has Bill previewing Windows 3.1 and its host of new features. The upgrade should be available by the end of 1991, prompting rumours of a sequel.

Truly a feature film, or film of features, *Windows at Work* awaits distribution in Europe and a UK price is yet to be set. ■

***• Microsoft president Bill Gates takes to the video screen once again for the promotional video* Windows at Work.**

Hungarian hi-tech hike

Western computer technology is crippling Hungary's state-run computer manufacturing base as trade barriers come down.

But with revolution has come success for private ventures, with one firm on the verge of appearing on the London Stock Exchange.

Now that western computers are more freely available, people in the young democracy are turning away from home-produced goods.

Only two weeks ago state-run Videoton, which employs 19,000 people, announced it was on the brink of collapse. The situation is not helped by its main customer, the Red Army, cutting right back on orders for PCs. However, privately owned companies are showing the way of the future for Hungarian hi-tech.

One of the largest, Microsystem, was founded in 1983 and is now among the largest private companies in Hungary with a value of £20 million. One third of the company will be offered for sale on the stock exchange later this year to raise capital for further expansion. ■

Superman's superbill • Sysop millionaires • PC pirates • le

DRUG BARONS CLONE PHONES

Drug dealers are 'cloning' mobile telephones to make calls costing thousands of pounds at the expense of innocent users.

Experts say calls have been traced to Columbia and the Far East and are being made to arrange drug deals.

It is believed that phones are hired by crooks for supposedly legitimate purposes. Then the unique electronic serial number is tampered with so it duplicates another user's phone.

Cellnet spokesman Damien Callaghan says that a secret 'Bandit Alert' program is being taken to foil the crooks. "The most important measures we can take are software developments that will frustrate attempted fraudsters."

Vodaphone is also clamping down, says spokesman Terry Barwick. "It's not something that can be stamped out because if you have a technology, someone will crack it. But we can certainly combat it."

• Fraudulent use of mobile phones by drug dealers has prompted a major crackdown by manufacturers.

He would not reveal details of the company's top secret anti-fraud measures for fear of tipping off criminals, but said one way is to fax a 'credit alert' to customers if unusual activity is noticed on their account. ■

SHOOT FROM THE LIP

'Maruman Corp is the latest Japanese hopeful to enter the notebook computer market: it has a 2lbs 3ozs box that runs for eight hours on two AA batteries and the company hopes to shit 10,000 in year one.'
Printed in June 27 issue of *Computergram International*'s minigram section.

'The common conception of a BBS operator – a nerdy, unsocialised gent with thick glasses, a gut to match and a megalomaniacal streak – is now way off base.'
Yet another interesting pronouncement from Jack Rickard, the editor of American BBS magazine *Boardwatch* . See what else he has to say in the 'Bulletin Bullion' story on page 2.

'Getting taken to court for refunds has become part and parcel of it because the business has boomed so much.'
So says Phil Craven, proprietor of Bradford-based mail order firm Microstyle, proving that every silver lining has a cloud.

*'I gave up running a successful company to get into the computer business, but changed my mind along the way and decided to open a bike shop. Then again, mountain bikers are such boring b******s I think I'll stick with hardware.'*
Computer consultant Ron Bentham and former managing director of a light engineering firm.

• Last summer an oil rig decided to upsticks and go walkabout in the North Sea. Computer error, gremlin or ELF?

A touch of ill ELF

Extremely low-frequency electromagnetic fields (ELFs) emitted by electronic appliances such as computers and televisions are once again being blamed for causing leukaemia, brain cancer and lymphoid tumours in humans.

However, a new threat has also emerged in the form of ELF-created 'electronic smog' which causes computer-based equipment to behave in extremely strange ways.

This 'smog' has increased the incidence of computer malfunction and failure. An outstanding example of this occurred last summer, when a propeller-driven exploratory oil platform unexpectedly moved, seemingly of its own accord, in the North Sea. Its controlling computer had been affected by ELF-produced electronic smog.

While evidence supporting these claims is contentious, the US Environmental Protection Agency has recently given support to those who believe in the harmful effects of ELFs. It is now widely accepted that people who work in the electricity industry or living near power lines show above-average cancer rates.

Some of the worst ELF hazards include such everyday things as video display units (VDUs) high-tension transmission lines, ordinary power lines and even electric blankets.

However, instead of things getting better, the problem is liable to get worse because the smaller computer chips are, the more susceptible they are to interference. ■

GET REAL! • GET REAL! • GET REAL! • GET REAL!

ARMLESS ROCKER

For the Nintendo fanatic who has everything, a Nintendo chair is now available. The armless, rocker style chair is designed to relieve the backache commonly experienced by games players and comes with a metal attachment on the front and a velcro-coated plate to hold the various game controls.

COMPUTER CALAMITIES

Send your tales of magnificent computer malfunctions to Computer Calamities, New Computer Express, 30 Monmouth Street, Bath BA1 2BW and we'll pay a fiver for each one printed.

This week, Andrew Jones of Lowestoft trawled up proof of that old computing adage 'garbage in = garbage out'. The cock-up involves the world's largest communications satellite Olympus, built at a cost of £500 million. On May 29 it went into an uncontrollable spin and is now drifting away from its orbital slot. Why? British Aerospace claims ground control staff in Italy pressed the wrong button. Oops. ■

• lectronic smogging • Teleclones

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Does Atari's decision to embrace CD-I mean you'll soon be able to buy a CD-I drive for your STE? – pages 6 & 7

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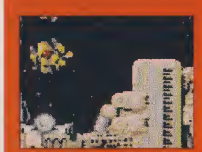

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Win a £1,200 Acer laser
Your last chance to grab this great laser for free! Turn to page 58 now

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Express examines Atari's proposed entrance into the world of CD-I

ATARI IS SET TO FLY

It's not just Commodore and Philips that are forging ahead with Compact Disc-based technology. Everyone, from NEC to Nintendo and Sega to Sony, is pitching in too. So it was only a matter of time before Atari would decide to enter the fray. And, surprise, surprise, it's not about to endorse the CDTV format. In a brave move, Atari has decided to go for a high-end implementation of CD technology – the TT-based Falcon. Andy Hutchinson focuses on the facts to hand while *Express* wonders whether today's ST owner will get a look in too...

Atari is working on a Compact Disc Interactive (CD-I) machine, code-named The Falcon.

The new machine is not ST-based, as was expected. Instead, it combines the CD-I Green Book standard, developed jointly by Sony and Philips, with Atari's own UNIX-based TT technology. The machine, which will be priced around the £2,000-£3,000 mark, will be with developers later this year and will ship in mid-1992.

Atari's UK marketing manager Peter Staddon explains the new machine: "Falcon is an umbrella project combining several areas of current technology. It will be launched into the high-end of the ST market. Falcon will combine leading new technologies, such as CD-I drives, with a high-end operating system, such as Unix, in a bundle with TT-based technology".

The Unix/TT-based nature of the Falcon was further detailed by Atari's UK managing director, Bob Gleadow: "It's a TT type machine with a slightly higher price point (the TT currently costs £1,880). It'll have more Virtual Machine Environment (VME) slots, more processing power and more ports than the TT".

• Atari's TT transputer workstation. Linking this with CD-I is seen as a way forward in terms of both computing power and gaining respect within the 'serious' computer arena.

Gleadow was keen to point out that the CD-I badge did not tie the Falcon into a leisure-based area

Importantly for home users awaiting a truly new, powerful and competitive product from Atari, sources close to the company are suggesting that the CD-I/TT combination is likely to work its way downwards to the rest of the ST range. In effect, this means that a CD (or CD-I)-based ST could become a reality early in 1992.

It is well known that Atari already has several thousand CD-ROM drives waiting in warehouses, which it could begin to ship as ST add-ons in the very near future.

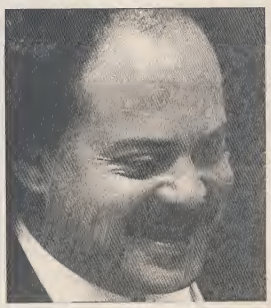
FALCON QUEST

In fact, Atari's chief executive officer Sam Tramiel has already revealed that the company will be releasing a CD-ROM drive that will support International Standards Organisation (ISO) 9660 and High Sierra formats – but not CD-I – in the near future. According to Tramiel, the drive will cost $499 (£200) "maximum", and will "do everything at least that CDTV does".

CD-I, however, presents a new challenge to the company. In order to attain full compatibility with the standard, Atari, like any other company wishing to licence CD-I, has two options: it can either attempt to produce its own CD-I-compatible drives, or it can purchase Philips or Sony-branded hardware and badge it with its own name.

GLEADOW SWEET

Speaking about full CD-I compatibility, Gleadow was reticent to detail any agreements which might have been made with the CD-I cartel of Philips, Sony and Matsushita. He told *Express*:: "Philips and Sony currently have an accord to produce a standard for CD-I. Obviously, if this accord happens, then we will wish to embrace it".



• Atari's chief executive officer Sam Tramiel is not known for his reserve when it comes to commenting on the future of his company. So an inadvertent slip in an Express interview led us to the discovery of the CDTT Falcon.

Philips, however, appears to know nothing of these plans. A spokeswoman for Philips Interactive Media Systems, the division responsible for CD-I development in Europe and the UK, told us: "It's all news to me. However, and this is my personal opinion, if they have decided that CD-I is going to be a worldwide format, then they've done the right thing."

Gleadow was keen to point out that the CD-I badge did not tie the Falcon into a leisure-based area. The initial batch of Falcons would not be targetted at the home-user at all. Instead, universities, higher education

SHOTS FROM THE LIP: ATARI EXECS SPEAK OUT ABOUT CD

"Is Compact Disc happening? You're looking at a man who has had Compact Disc players in his warehouse for 18 months now. Where is the software commitment? Show me a CD standard. Is it CD-I?"
Atari's UK managing director Bob Gleadow talking about CD in March 1990 (Express 71).

"They're [CD/computer combinations] going to cost £600-£700. How big is the market opportunity at the price range?"
Gleadow.

"It's better to offer computer buyers the CD as an extra rather than offering a highly-priced integrated system".
Gleadow.

"We've actually had that idea [CDTV] for the last three to four years. But they've [Commodore] done a nice packaging job. And I'm dying for more CD machines to come out".
Atari's chief executive officer Sam Tramiel speaking frankly to Express in June 1990 (Express 85).

"I think we'll probably do both; bring out a low-price CD drive for today's STs and then bring out a CD-within-an-ST as one machine as well. The one machine will be next year [1991]; the separate machine might even be next year. We certainly have everything ready and, now that the software people are behind CD, we can start moving very quickly".
Tramiel.

"Big databases, educational-type stuff. We're working with very similar people [to those in CDTV]".
Software development for CD-ST, courtesy of Sam Tramiel.

"If we had five good titles I would launch it and then we'd build it up from there. We have two right now which are pretty good. We just need a few more major ones and we can get going".
Tramiel.

"The latest high-tech development project ... will not be unadjacent to CD".
Atari's PR man Peter Walker to Express in March 1990 (Express 72).

"Obviously we don't want to be the guys who launch the Betamax version of the CD computer. The developments between the likes of Philips and Sony to develop a CD standard are quite awesome, so we will wait for a standard to be developed.

"CD technology is not new to Atari, and not something it would take very long to kick into once we have the final details. We don't have a product now that I can say: "this is our CD-I player – disc drive", whatever, but given the amount of development work that Atari has already put into this area it will take us very little time to fine-tune to hardware and software".
Marketing manager Peter Staddon, speaking to Express in April 1991.

COVER FEATURE

and asks why the TT and not the ST forms the basis

HIGH WITH CD-I

The Falcon: anatomy of a story...

Stories of new computer hardware rarely fall into your lap. The tale of the Falcon is no exception. The interview with Atari's chief executive officer Sam Tramiel, printed in *Express* two weeks ago, provided a clue as to the existence of a previously unheard-of machine. Replying to a question about the proposed 64-bit Jaguar console, Tramiel inadvertently answered: "Today we have the Falcon, the STE and the Mega STE". At this point no-one knew what the Falcon was and preliminary investigations yielded no results. As such, a decision was taken to drop the reference while more extensive research was brought to bear.

Andy Hutchinson, of sister magazine *ST Format*, got on to the case, calling up various contacts in the United States as well as going to Atari in the UK for as much information as he could extract on the Falcon.

However, Atari executives on both sides of the Atlantic refused to talk about the machine, either through ignorance of its specifications and details, or because they had been told not to open up to the press.

Atari's UK PR spokesman could only offer that he believed Falcon was simply the American name for the TT machine. It seemed that the story had run dry.

Hutchinson continued his searches, trying to get in touch with Tramiel directly. Finally, and unexpectedly, Atari UK's marketing manager Peter Staddon confirmed the story in full. His initial reaction to Hutchinson's question about the Falcon was, in the words of the writer, "stunned". Staddon said: "I couldn't begin to tell you about that." In fact he had to call Hutchinson back. The reason for this is that decisions about Atari's long term planning and new project launches are made in the United States and then handed down to Europe and the UK.

Again surprisingly, the return call yielded a confirmation of the name and some idea of price of the new machine. Staddon began by saying: "Falcon is an umbrella project..." and the rest forms the story you are reading right now. ■

establishments and research centres will be the first sites on the list.

Sources close to the company are suggesting that the CD-I/TT combination is likely to work its way to the rest of the ST range

Atari's ambitions for the machine are not confined to what have been perceived as its conventional hunting grounds in the home/leisure markets.

Bob Gleadow revealed to *Express*: "We're trying to get into the personal workstation market, placing the Falcon against products such as the Sun workstation."

He also feels that the software base that will become available to the Falcon – with developers making the most of both the UNIX, CD-I and even STE potential – will allow it to compete on more than marginal terms with such well-established and highly respected companies as US manufacturer Sun.

"The purchaser can use UNIX where he needs it, but can then also use the ST's software where needs be. Initially the software will come from the ST library, but by the time the machine comes out we'll have a library of UNIX applications because UNIX is already available for the TT, plus enhanced ST applications", said Gleadow.

Although Atari seems to announce new machines virtually every month, it has an excellent track record for delivering the goods it pre-announces – even if they arrive long overdue. ■

• While lucky Amiga owners can look forward to an add-on CDTV drive in September for £299, STE owners would appear to have a much longer wait before they can enjoy the digital delights of CD-technology.

HOW LIKELY IS AN EXTENDED STE?

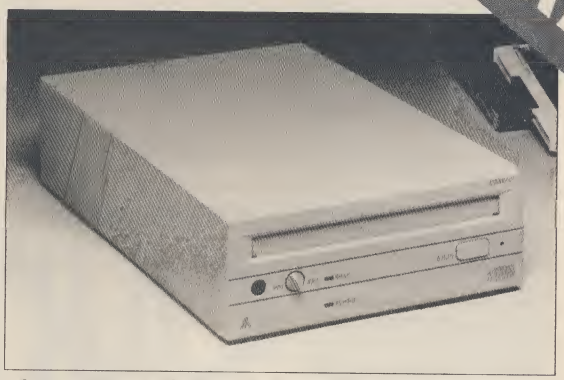
"Falcon is just one of a number of projects that Atari is working on at the moment, most of which are based around the ST platform", says Atari UK managing director, Bob Gleadow.

One such machine could be an STE with extended graphics and sound. This would fill the gap between the £299 entry-level STE and the £499 Mega STE. The exact features for a 'Super STE' remain a grey area, but the evidence points strongly to certain aspects.

First, both STyle and STBook portables have two RAM card slots each. It would seem highly likely that new STEs would incorporate this feature, thus enabling them to act as bases for the portables. Some of the technology developed by Atari for its 64-bit Jaguar games console is also likely to be used in the extended STE. The sound chips in the console, which are rumoured to be 16 channel FM, could easily be placed in an ST.

We asked Bob Gleadow if this was likely. He said, "What a good idea." The company remains adamant that the £299 STE will form the cornerstone of all these new developments.

Atari has made it quite plain that it cannot and will not be dropping the price of the entry level STE any further and that there will simply be new machines offering improved processing power while retaining complete compatibility throughout the entire ST range. ■



• Atari's most recent glance into the world of CD. The reconfigured version of its ill-fated three-year-old CD-ROM drive. Thousands of these are known to lurk in Atari warehouses. The latest £399 device is STE-compatible, but can only act as a storage device. It is neither CD-I nor CDTV-compatible.

EXPRESS COMMENT

JUMPING ON BANDWAGONS?

Atari, like all computer manufacturers, has to be seen to be on the cutting edge of developments. Consequently, its entrance into the world of Compact Disc Interactive (CD-I) computing at this time is entirely logical. CD is the future. There's no doubting that. Where the debate rests at present is whether that future will be CD-I or CDTV-based.

Atari is hardly likely to head up the route of CDTV, which has been blazed by its long-time rival Commodore. Nor is it naive enough to think it can forge its own standard. And with the kind of muscle backing CD-I, the choice is obvious. The real surprise lies in the fact that it has opted to begin its foray into CD-I not with a CD-ST, but with a high-end, relatively high-priced, transputer-based UNIX workstation.

Why is this?

The cynical view is that the STE cannot provide a strong enough base for a proprietory CD-ST. And there is some truth in this. It is well known that it has several thousand, non-CD-I-compatible drives waiting in warehouses to be produced as add-ons for the STE. But the software isn't there. You can buy a CD-drive for your ST right now – but you try finding anything to run on it.

The major initiative is that Atari has opted for CD-I, with the huge software base it represents, and declared an interest to ready itself for what is a potentially a massive market in late 1992.

The transputer base of the Falcon would certainly provide the processing power to run full CD-I emulation. It could equally run STE emulation and even Multimedia PCs (MPC) could get a look in. All this on one machine inside a university, research centre or corporate business could mean plenty of research and development for Atari in readiness for the 'big push' into the as-yet unformed mass market.

In the long run it also offers a veneer of respectability; a credibility consistent with Atari's avowed intentions to muscle in on the high-growth-rate workstation market. When Bob Gleadow says that he wants the Falcon to compete with Sun, he is not making idle threats. Nor is he picking names from a hat – Sun is one of those names that drips with high-end respect. Gleadow is making a point. And that point is that Atari no longer wishes to be seen as merely as a purveyor of games machines to the masses. It wants respect. It needs respect.

It seems obvious then that an Atari CD-I player and CD-ST will emerge in the fullness of time. We expect the latter by late next year.

But, from a hard business perspective, there is no point in Atari launching its own CD-I player just yet. The most sensible course of action is to hold back until a mass market has been properly formed. Again, probably by late next year.

As such, the 'CDTT' Falcon offers a credible development platform and allows Atari to be seen to be joining in with the latest 'next-big-thing' without committing itself fully. Meanwhile, developers can begin to work on both Atari's transputer base and CD/ CD-I projects simultaneously.

When the mass-market CD-ST eventually emerges late next year, there should be sufficient software in position to ensure the device doesn't die the slow, silent death of the company's first CD-ROM drive. ■

NIBBLES

Faster co-pro

Integrated Information Technology has released a 40MHz version of its 3C87 math co-processor for £198, which, it claims, is up to three times faster than those of its competitors, including Intel. For more information contact IIT on 0628 890984.

Wireless terminals

Lex Industrial Systems claims to have produced a wireless terminal that offers all the functions of traditional, hard-wired computers. It says that its latest developments in wireless communications mean that systems are more cost effective and easier to install. The company reckon the terminals' mobility make them ideal for use in warehouses and other materials handling jobs. Call Lex on 0272 239143.

LAN update

Comtel Datacom has released the latest version of its Local Area Network (LAN) operating system Network.OS Plus. Compatible with Netbios, it supports over 50 LAN network interface cards and up to 255 users. It doesn't require a dedicated file server as each workstation can be a network server. A three user network system costs £699, while for each node, the software costs £120. Contact Comtel on 0223 420263.

Stock-king filler?

Cornix Software has released *Stock Control*, an extension to its invoicing package, for both the PC and Amstrad PCW. Additional features include automatic update reports on stock levels and values. It also warns of items that have fallen below their minimum stock level. *Stock Control* costs £57.58, while the original *Cornix Invoicing* is £81. Call Cornix on 0234 219969.

Ventura scouts

Ventura Software's *DataBase Publisher* is a new Windows-based package that arranges and prints database files with more professional-looking output. Effectively, this means that the files are published rather than merely printed. Data can be imported from major DTP packages such as *Ventura Publisher* and *Pagemaker*. *Ventura DataBase Publisher* is priced at £595. Contact Ventura Software on 0753 550022.

Corporate competition capers

Big businesses are flexing their corporate muscles in preparation for the fifth annual Lotus IOD Business Challenge.

Sponsored by Lotus Development and the Institute of Directors, teams of six are invited to run an imaginary business using spreadsheet tools. Run over three rounds in four months, with a host of tasty prizes including Lotus software and an IOD trophy, the competition simulates a business environment to stimulate appreciation of what can be done in business with computers.

Organiser Ken Gorrod says: "We're providing an opportunity for businessmen to run a business with a wider scope than they would do in their present situation."

With insurance heavyweight Legal & General scooping the honours last year, competition is likely to be high-powered. Entry forms are available from Ken Gorrod on 081-947 6381.

£299 PC and printer

• Print and be damned! Or maybe not. The latest sub-£300 PC package from Crown computers includes PC and dot matrix printer.

Despite all the 386SXs, turbo 486s and rumoured 586 PCs, the Amstrad PC1512 is still doing the rounds. And now it's even cheaper.

Crown Computer Products has reduced the price of the Amstrad PC compatible system from £499 (£798 with printer) to £299. The package includes the Amstrad PC1512 PC with mono monitor, *Gem*, *Wordstar*, *Supercalc* and *Accounts Master* with an Amstrad DMP 3160 dot matrix printer. Crown is on 0704 895815.

Commodore entices kids with new classic A500 bundle

CARTOON CAPERS ANIMATE AMIGAS

Commodore this week launched its latest Amiga 500 bundle, Cartoon Classics.

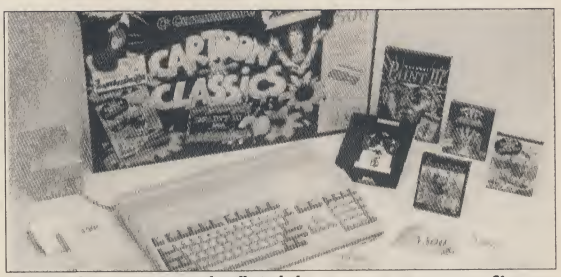
It contains just three games, *Captain Planet* (Mindscape), the previously unavailable Simpsons game *Bart Versus the Space Monsters* (Ocean) and the notorious puzzle game *Lemmings* (Psygnosis), each of which will have a strong appeal to kids.

Also included is the acclaimed paint package *DeluxePaint III* along with an A512K RAM expansion, a TV modulator and, of course, the Amiga itself. The price will remain the same as previous Amiga 500 bundles, such as Screen Gems, at £399.99 including VAT.

"Cartoon Classics is the best bundle we've ever assembled," says Commodore's managing director Stephen Franklin.

Simon Jeffrey of Electronic Arts agrees: "We're delighted. *DeluxePaint* has been part of Commodore's success and we are glad to see it bundled along with such high quality games."

He continued: "Atari made the mistake of giving away too many games with the ST. If you buy an ST and get 23 games, unless something brilliant comes out you won't bother buying anything else. The games in this package are like teasers which show what the Amiga can do."



• Commodore's new Amiga bundle includes an, as yet, unseen new Simpsons game, and three other cartoon-based titles. Also included is DPaint III - a combination which could prove to make this the biggest selling pack ever

However, Atari, which recently launched a more productivity-based bundle for the 1040STE, the Family Curriculum, including a word processor and educational software, feels that Commodore has misjudged the state of the computer market.

A spokesman told *Express*: "We believe that increasingly consumers must have another reason to buy a home computer other than games. Price and productivity will be the two new areas that new consumers will look for. Our stockists' perception is that customers don't want a games only product."

The Classic Cartoon bundle comes at a crucial time for Commodore, as the company attempts to carve a 'serious' niche for its CDTV (Commodore Dynamic Total Vision) system while retaining a hold on the lucrative games market and keeping faith with a user base running into hundreds of thousands that it has for its Amiga and C64 computers.

CDTV has been launched with a range of software which includes a large proportion of educational and reference titles, such as *The Time Table of Science and Innovation* and *The Illustrated Bible*. Commodore has gone to great lengths to portray the system as the next stage in the evolution of electronic interactivity and not just another computer.

At the other end of the Commodore home computer range, the C64 bundle was also recently revamped (see *Express* 138) and now includes just one cartridge containing four games. Despite being renamed Playful Intelligence, the bundle has been criticised by many industry pundits for reducing the C64 to little more than a games console.

PC, heal thyself

The days of running software-based virus checks on your machine when you log-off a bulletin board, or run a new piece of software could be numbered.

The Fora Corporation of San Jose, US, has developed a hardware device, called Safeguard, that does the job automatically. The hardware connects to the parallel port and automatically stores boot sector and partition table information that can be used to restore a damaged disk's directories if attacked by a virus.

Software, called Safelink, also comes with the package and checks for new viruses, keeping tabs on what is happening to the files. It is capable of monitoring data at up to 500 kilobaud.

Call Fora on 0101 408 944 0393.

WordPerfect for the Macintosh

Owners of the new low-cost Apple Macintoshes need no longer fork out hundreds of pounds for a word processor, they can simply upgrade the ones they have already got.

From the start of July until the end of September, Mac owners who use *Microsoft Word* will be able to upgrade to *WordPerfect* 2.0 for the Macintosh for £83. Users of all previous versions of *WordPerfect* can upgrade to version 2.0 for £72, while Macintosh User groups will be able to get the software for £59.

At the same time, WordPerfect has reduced the price of its UK PC software which now means that its products will cost the same no matter where in Europe they are purchased.

The price of *WordPerfect* 5.1 has fallen from £425 to £399, while *DrawPerfect*, *PlanPerfect* and *DataPerfect* have all been reduced to £359. *LetterPerfect*, the company's budget word processor, has been cut from £175 to £169. And when it is released, *WordPerfect* for Windows will cost £399.

Hay calls for tighter laws as FAST celebrates success.

GAMES PIRATE SENT TO JAIL

The Federation Against Software Theft (FAST) is celebrating its first ever jailing of a leisure software pirate.

And moves by the federation are afoot to push for a shake-up in trading standards' law in a bid to bring more pirates to book.

In last month's ground-breaking prosecution, computer dealer Andrew Jayes, trading as A&J Software of Annersley Woodhouse, Nottingham, was sentenced to three months in prison by Mansfield magistrates. He had been found guilty of five offences under the Copyright, Designs and Patents Act 1988.

The success of the prosecution, brought by Nottinghamshire Trading Standards' Authority, has been welcomed by FAST, which mounted 16 raids throughout England and Wales in June involving the seizure of more than 10,000 illegally copied disks.

FAST chief executive Bob Hay says: "This case is a good indication of the co-operation between FAST and trading standards' officers in many authorities across the UK. I am sure the decision of the magistrates will serve as a deterrent in the future".

But nailing the culprits is not the whole story, as Mr Hay reveals. Out of 12 successful prosecutions last year involving £2 million worth of software, the leisure pirates received fines and suspended sentences, but the deterrent of jail was not used.

• Bob Hay – "Magistrates' decision on this case will serve as a deterrent in the future."

Another factor is that each pirated program constitutes a separate offence and, with some cases involving hundreds of programs, the judges can only go on specimen charges involving a fraction of these. This is even more of a problem in Scotland where judges cannot, by law, hear specimen charges. One prosecution currently under way involves more than 2,000 disks.

"It is a great deal of work," says Mr Hay. "But we're trying to streamline the procedure."

He said FAST hopes to have talks with representatives of both the English and Scottish judiciary to bring about changes that will ensure that further action taken against pirates more effective.

So far this year FAST has taken action in more than 80 civil cases in which software licences have been openly abused – a fraction of the estimated £300 million lost through software piracy in the UK each year. ■

• No, it isn't broken. Instead of carrying a laptop around with you when you want to look after your valuable data, you can just remove the hard drive.

Take-away security

Elonex's latest 386SX laptop, the LT-320X, has been designed to improve security by having a removeable hard drive.

The addition of the hard disk means that if you have to leave your machine somewhere unattended, you can take the disk with you, thus protecting valuable data.

The hard drive is available in 40Mb and 120Mb sizes. The machine also comes with a 20MHz 386SX processor, 2 or 5Mb of RAM, a 32K cache and a backlit LCD VGA display. Disk storage is provided by a single 3.5-inch floppy drive.

Battery life is said to be two and a half hours. The laptop also comes with DOS 5.0, Windows 3 and a Microsoft-compatible mouse.

Prices start at £1,495 for a 7.5 kg, 2Mb, 40Mb removable hard drive machine and is available from Elonex on 081-452 4444. ■

Multimedia phonelines

Remember the videophones featured so prominently in every Sc-Fi movie since 1948? The ones in which you could actually see the person to whom you were talking? Well, the reality of full video-conferencing on the mass scale is rapidly approaching.

According to Bellcore, the research arm of the US Bell telephone companies, it will soon to feasible to send visual, voice and data signals simultaneously over a single copper phoneline.

Bellcore's asymmetrical digital line technology (ADLT) can expand the transmission capabilities of current copper-based telephone networks by using a few high-speed chips. To use the technology, the device containing the chips would be connected between the local telephone exchange and the user's home or business.

Possible uses of all this technology could include phone companies giving access to home shopping, library data bases and long-distance education services. However, this will all take a while to develop - Bellcore will be issuing a progress report in mid-1992. ■

Keep clear of the rays

Scaremongering or hard fact? Radiation emissions from computer screens have been worrying users for some years. Now Accodata claims that it has come up with top notch protection.

Its 'Roller Blind Protector' Screen Filter is claimed to stop radiation from getting to computer users, no matter what the sized screen they are using.

The filter uses a special microweave mesh that shields users from electromagnetic radiation, including low level emissions. At the same time, the screen stops screen glare, improves contrast and stops screen static.

The Roller Blind Protector Screen Filter is available in three sizes and ranges in price from £85 to £98. Accodata can be contacted on 0732 885555. ■

• Practice safe computing with the Roller Blind Protector – it will help shield you from harmful electromagnetic radiation.

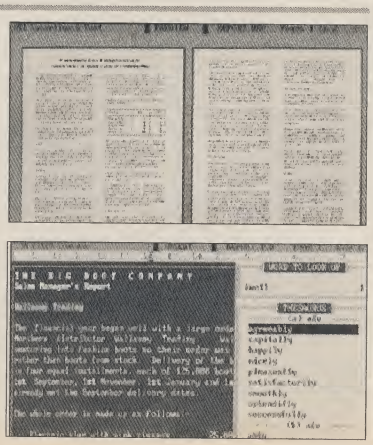
The 5K word processor

TopLevel Computing's *Top Copy Plus* and *TopCopy Professional* word processors have been updated so that they only use 5K of RAM, the rest of the program being stored in extended memory.

This is possible because of a 'Code Paging' Algorithm which swaps the programs in and out of expanded or extended memory, and means that other programs, like Lotus *1-2-3* , can be run at the same time. Users can swap between the programs at any time and can even import text from the other applications into *TopCopy*.

Other enhancements to the programs include an extended spellchecker/dictionary that includes 35,000 specialist medical and legal terms.

TopCopy Plus is available for the PC and costs £99, while the Professional version is £199. Versions for networking are also available. For more information contact Toplevel on 0453 753955. ■



• D you recall the 'good' old days, when 5K was all you needed to run a word processor? Those days are back with us, thanks to a new word processor for the PC.

Accounting for the Atari ST

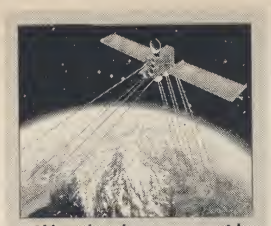
Atari-based businesses can inject colour into debt management with Bay Computer's upgraded financial management package, Invoice and Statement Generator.

The latest version (1.70) runs on a colour system, as well as the original hi-res mono system, and includes full debtor analysis so all accounts with payments outstanding can be clearly viewed and printed out.

The full version is available only from Bay Computers (0542 831162), but a demo version is in the Public Domain and available from most PD libraries. ■

TOMORROW'S CUTTING EDGE

Can't keep up with computing? Never fear, the next best thing is probably already in development. If so, you'll read about it here first.



• Able to leap huge oceans with a single bound, the paging devices of the future will mean there is nowhere you can go without being beeped.

Linking about the world

As computers and computing increases in speed and technological advances make communications almost seamless, the world shrinks.

September this year sees a brand new radio paging service between Japan and the United States kicking into action. The service is being provided by NTT International (NTTI) of Japan and Mobile Telecommunication Technology of Mississippi.

In the US, the joint venture will at first only be offered as an optional extra to NTT's current radio paging subscribers. Japanese NTTI subscribers who visit the States, though, will be able to use the same service.

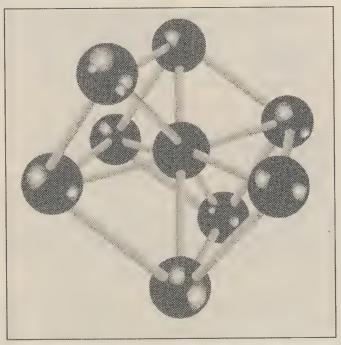
Internationally, the radio paging links will initially only be available between Japan and the US, but NTTI wants to expand the service to Mexico, Canada, Singapore, Taiwan, Hong Kong, Korea, Thailand and eventually Europe. ■

Protein power pulls through on the computer chip front

Replicants? Wimps. Robocop? Yawn. No, the intelligent cybernauts and computers of the future won't be these metal monsters, but self-replicating, adaptable protein-based beasts.

Within a decade, computers could consist of powerful chips made of proteins. Not only will they be more powerful than their silicon counterparts, they will also be biodegradable and will not require petroleum-based products to manufacture them. Yes, computers of the future will be green as well.

Protein is such a powerful and adaptable force that developments further in the future will push computer technology to almost limitless boundaries. These little aminos can do almost anything, from reproducing themselves to adapting to different conditions. Basically, they are the essential organisms of every living thing.



• Just think what it'd be like if protein could be used as the main processor in your computer – computing could really come alive...

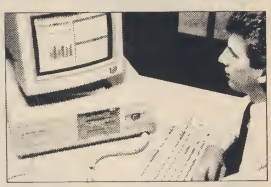
In theory, computers based on these 'biochips' could pack more power into a smaller space. Silicon chips can be spaced less than one micron (one ten thousandth of a millimetre) apart, but beyond a certain point the system will overheat. Conducting proteins can transfer electrons without the significant heating that limits the size and available memory of current, hard-wired computers.

Scientists have been working towards simulating the conductive properties of naturally occurring materials for several years. Now, for the first time, one of the first major obstacles has been removed. Chemical structures and electrical forces can be defined which allow one protein molecule to recognise and hook up with another to form an 'electron transfer complex'. Scientists can use genetic engineering to manipulate the arrangement of the protein, aligning metallic properties to create an electric circuit. Using this process, the basics of the biochip are being developed.

Initially it is hoped that this research will result in a new class of electrical devices, similar to the light-emitting diodes (LEDs) used in high-speed fibre-optic systems. Prospects for the immediate future range from more advanced electrical circuits to fully-fledged super-computers that will fit on the desktop.

What this could eventually lead to is true artificial intelligence, where machines think for themselves, without using human-developed algorithms. They could reproduce themselves growing and evolving within the constraints of the machine to become super-machines and, perhaps, super-beings. ■

Intel's cool combination



• Compaq is one of the first companies to announce a PC based around Intel's new 50MHz 486 processor.

While Intel is busy releasing its legitimate 50MHz 486 processor, Everex is demonstrating a 50MHz PC of its own based on an ice cold 33MHz 486 processor.

Instead of being based on Intel's new chip, Everex is running a standard 33MHz chip in combination with a new product from Velox Computer Technology called IceCap. This is a device which refrigerates the chip so that it runs faster.

However, Velox is not prepared to stop there. It is also developing motherboards with in-built refrigerated microprocessors. Artificially cooling a 33MHz chip in order to run it at 50MHz has potential timing problems in the other components of the PC which are not built for high speeds. The idea is to produce a low-cost 50MHz 486 PC by incorporating built-in IceCap capabilities with hardware designed to withstand the speeds.

A 100MHz version of the 486 is believed to be in the works and IceCap could be used to speed up this chip too, so that desktop machines could run more than four times faster.

However, back in the real world, Intel's own 50MHz 486 is said to run 51.5 per cent faster than its 33MHz version (meaning that it would actually run at 49.995 MHz).

At the PC Expo in New York, both Compaq and Wang also announced systems that use Intel's enhanced chip. ■

IBM moves on Multichip

The first high speed multichip has been developed in a joint project between IBM and the Yasu Technology Applications laboratory in Japan.

The 'multichip' is a prototype of a tiny wafer thin processor module consisting of nine chips arranged in a two-inch square package capable of producing speeds of 100MHz.

It is based on relatively inexpensive and well-known technology and is expected to bring the benefits of multichip packages to smaller computers for the first time.

This development will take a while to get into mainstream computing, but it is well on its way, having already passed IBM's own reliability tests. The next step to turbo-charged desktop computing is to actually design a PC capable of making full use of the immense increases in power. And even IBM claims it doesn't know how long all this will take. ■

A walk on the CAD side

Two dimensional computer aided design (CAD)? That's for wimps. Now users of the *Autocad*, *Versacad* and *Microstation* CAD modelling programs can not only create objects, but they can 'walk through' them as well.

Hydra, from Interactive Software, is a presentation software package that generates 3D models which users can 'walk through' and around.

• Why go outside for a bit of exercise when you could stay at home and walk through your computer-created objects?

Hydra can be used on a 386 PC that uses any 256-colour VGA, 8514/A or TIGA 2.0 graphics card. According to Interactive, you don't even need CAD software to reap the benefits of *Hydra*. The files that result from the walk through can be saved as Autodesk animator FLI files or even recorded on video tape.

The package supports the NthTV video board, Diaquest and BCD controllers and PC-based GA to NTSC/PAL video cards. All this for £345, including a standalone animation player. ■

HDTV adapts a standard

Despite being accepted as the logical next step in TV and computer monitor evolution, mass confusion still marrs the acceptance of a worldwide HDTV standard.

However, some sense of decorum has finally been injected into the multi-million pound worldwide bickering match. An adaptor is being developed to allow the many different High Definition Television (HDTV) standards to be viewed on all systems.

Up until now, rather than get together and define such a standard, Japan and many European countries have created their own HDTV systems. Inevitably this has lead to the demon of incompatibility raising its head.

Because this could result in a situation reminiscent of the PAL v NTSC v SECAM which stops UK users from using US software and vice versa (it also makes *I Love Lucy* look as if it was filmed with a Super 8 camera), ministers of all countries involved have agreed to develop the adaptor.

The first solid sign of this accord will be a Japan-French HDTV working committee which will begin research on the subject. It is expected that if the combined system is effective, an agreement could be made with the US in the future. ■

CITIZEN PRINTERS

Silica presents some great offers on the award winning range of high quality dot matrix printers from Citizen. Each Citizen printer is built in the UK to exacting standards, ensuring superb reliability and a very high quality of output. Our confidence in the quality of Citizen printers is such that we are pleased to offer a unique two year guarantee with every printer. Plus, if you purchase your Citizen printer from us, we will give you a Silica Printer Starter Kit (worth £29.95), *FREE OF CHARGE!*

FREE DELIVERY
Next Day - Anywhere in the UK mainland

FREE STARTER KIT
Worth £29.95 - With every Citizen printer from Silica.

FREE COLOUR KIT
Worth £39.95 - With Swift 9 and Swift 24 printers.

2 YEAR WARRANTY
Silica offer a 2 year warranty (including the printer head) with every Citizen printer purchased from Silica.

WINDOWS 3.0
Free Windows 3.0 driver - In the Silica Starter Kit.

FREE HELPLINE
Technical support helpline open during office hours.

MADE IN THE UK
Citizen printers are manufactured to high standards.

144 CPS DRAFT 9 PIN

CITIZEN 120D+

The Citizen 120D+ is one of the UK's best selling printers. It has a stylish appearance and excellent features and performance for such an inexpensive printer. The 120D+ is available with either a serial or parallel interface and is an ideal first printer.

- *9-pin Printhead*
- *Print Speed 144cps Draft*
- *30cps NLQ*
- *Epson & IBM Graphics Emulation*
- *Pull Tractor & Bottom Feed*
- *Superior Graphics - 240×216dpi*
- *FREE Starter Kit*

RRP £233.83
STARTER KIT £29.95
TOTAL RRP: £263.78
SAVING: £112.20
SILICA PRICE: **£151.58**

£129 +VAT = £151.58

144 CPS DRAFT 24 PIN

CITIZEN 124D

The award winning Citizen 124D brings high quality 24-pin dot matrix printing within every computer users reach. It is the ideal choice where high quality printing is required at a budget price.

- *24-pin Impact Printer*
- *Print Speed 144cps Draft*
- *2 LQ Fonts (48cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *Superior Graphics - 360×360dpi*
- *FREE Starter Kit*

RRP £292.58
STARTER KIT £29.95
TOTAL RRP: £322.53
SAVING: £112.20
SILICA PRICE: **£210.33**

£179 +VAT = £210.33

192 CPS DRAFT 9 PIN

SWIFT 9 - COLOUR!

The Citizen Swift 9 is perfect for those who require high quality dot matrix black or colour printing at a budget price. The print quality of Swift 9 rivals that of other manufacturer's 24-pin models.

- *9-pin Impact Printer*
- *Print Speed 192cps Draft*
- *3 NLQ Fonts (48cps)*
- *8K Buffer*
- *Epson & IBM Graphics Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP £280.83
STARTER KIT £29.95
COLOUR KIT £44.65
TOTAL RRP: £355.43
SAVING: £133.35
SILICA PRICE: **£222.08**

£189 +VAT = £222.08

192 CPS DRAFT 24 PIN

SWIFT 24 - COLOUR!

The Citizen Swift 24 is one of Europe's best selling printers and has won awards including Printer Of The Year 1990. Its rapid print speed, quality and black or colour options, make it a natural choice.

- *24-pin Impact Printer*
- *Print Speed 192cps Draft*
- *4 NLQ Fonts (64cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP £428.88
STARTER KIT £29.95
COLOUR KIT £44.65
TOTAL RRP: £503.48
SAVING: £199.15
SILICA PRICE: **£304.33**

£259 +VAT=£304.33

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PRA 1242 **124D/Swift 9/24** £24.03

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PRA 1236 **Swift 9/24** £39.65

All prices include VAT and Free delivery.

FREE! STARTER KIT

Every Citizen printer from Silica, comes complete with the Silica Printer Starter Kit, including everything you need to get up and running with your new printer immediately, FREE OF CHARGE!

- *3½" Dual Format Disk with Amiga & ST Printer Drivers*
- *3½" Disk with Drivers for Microsoft Windows 3*
- *2 Metre Parallel Printer Cable*
- *200 Sheets of High Quality Continuous Paper*
- *200 Continuous Address Labels on Tractor Feed*
- *5 Continuous Envelopes on Tractor Feed*

If you already own a printer, and would like a Silica Printer Starter Kit, you may order one (ref: KIT 5000) for the special Silica price of £24.95 - £5 off RRP!

NORMAL RRP **£29.95**

SILICA SYSTEMS OFFERS YOU

- ***FREE OVERNIGHT COURIER DELIVERY:*** On all hardware orders shipped in the UK.
- ***TECHNICAL SUPPORT HELPLINE:*** Team of PC technical experts at your service.
- ***PRICE MATCH:*** We normally match competitors on a "Same product - Same price" basis.
- ***ESTABLISHED 12 YEARS:*** Proven track record in professional computer sales.
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- ***BUSINESS/EDUCATION/GOVERNMENT:*** Volume discounts available for large orders.
- ***SHOWROOMS:*** Demonstration and training facilities at our London & Sidcup branches.
- ***THE FULL STOCK RANGE:*** All of your PC requirements from one supplier.
- ***FREE CATALOGUES:*** Will be mailed to you with offers and software/peripheral details.
- ***PAYMENT:*** By cash, cheque and all major credit cards.

Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or some technical help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is one of the UKs leading independent computer dealers and provides a quality service to users at home, in education and in business throughout the nation. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature on the Citizen printer range and begin to experience the "Silica Systems Service".

SILICA SYSTEMS

MAIL ORDER:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX		**Tel: 081-309 1111**
Order Lines Open:	Mon-Sat 9.00am-6.00pm	No Late Night Opening	Fax No: 081-308 0608
LONDON SHOP:	52 Tottenham Court Road, London, W1P 0BA		**Tel: 071-580 4000**
Opening Hours:	Mon-Sat 9.30am-6.00pm	No Late Night Opening	Fax No: 071-323 4737
LONDON SHOP:	Selfridges (1st Floor), Oxford Street, London, W1A 1AB		**Tel: 071-629 1234**
Opening Hours:	Mon-Sat 9.30am-6.00pm	Late Night: Thursday until 8pm	Extension: 3914
SIDCUP SHOP:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX		**Tel: 081-302 8811**
Opening Hours:	Mon-Sat 9.00am-5.30pm	Late Night: Friday until 7pm	Fax No: 081-309 0017

To: Silica Systems, Dept NCE 0791 - 55, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND CITIZEN PRINTER INFORMATION

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At last, the Rendale Super-VHS 8802 is available. This high quality unit is based around the Rendale 8802, and offers additional features such as:

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WHAT'S NEW

Whether it's printers or CD-ROM drives, the *Express* at-a-glance new product guide cuts out the PR speak and gives you just the hard facts

CD Plus for Mac

PRODUCT: CD-ROM drive
NAME: Apple CD SC Plus
COMPATIBILITY: Apple Mac, Apple II

To give Apple Macintosh and Apple II users a fast and easy way to access large amounts of information, Apple is launching the CD SC Plus drive, an update to its current CD-ROM drive.

The drive can store more than 650Mb of information on a single CD-ROM disc and supports both the ISO and High Sierra industry standard CD formats. It also features audio capabilities so users can listen to CDs through the drive's headphone jack.

To improve reliability, a built-in door means CDs can be loaded from the front, while an automatic lens cleaning mechanism protects the drive from dust.

The drive can also be attached to an Appleshare file server which means more than one user can access information from a single disc.

It is also capable of running under Apple's new operating system, System 7.

Price: £716.75
Availability: Mid-August
Target users: Individuals, businesses and in education
Contact: Apple: 081-862 3028
Perceived competition: Philips' and NEC's Mac CD-ROM drives

Cheap crunching

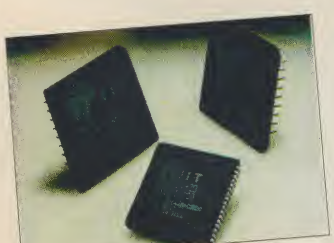
PRODUCT: Math co-processors
NAME: IIT co-processor range
COMPATIBILITY: PC

Anyone who wants to upgrade their PC to handle mathematics-intensive jobs can do so cheaply thanks to Integrated Information Technology (IIT) which has just cut the prices on its maths co-processors by up to 60 per cent.

The company's co-processors are based on a new chip architecture which, IIT claims, enables them to run two or three times faster than similar models from Intel, IIT's main competitor.

"The performance is usually much better, is never worse, and you can get it for less than the price of the competition", says European managing director of IIT, David Harper.

Price:
For 286s: £53 for 8MHz to £97 for 20MHz
386s: from £87 to £178 for a 33MHz. 40MHz coming soon for £312
Availability: Now



• Number crunching is what PCs do best. You could give your machine the chance to munch more now that prices have been cut on IIT math co-processors.

PCs are a wise decision

PRODUCT: Range of 386 and 486-based PCs
NAME: Wyse Decision 486/33T and 386/25
COMPATIBILITY: PC

The Decision 486/33T and 386/25 computers are additions to Wyse's existing Decision range of PCs.

The 486/33T is a high-performance tower machine for local area networks (LANs) and multi-user set-ups, supporting up to 48 users. Based on a 33MHz 486 processor, it features a seven-slot ISA (Industry Standard Architecture) bus, an 8K memory cache to speed processing, an integrated 80387 math co-processor and 4Mb of system memory.

It is available in five configurations, with hard disks ranging in size from 110Mb to 420Mb.

A bit less powerful is Wyse's Decision 386/25, a 25MHz mid-range machine. It comes with 2Mb of system memory, expandable to 32Mb, and a 64K memory cache expandable to 128K. Seven expansion slots are included. It is available in four different set-ups.

• A tower of strength or merely another 386 PC to clutter the desktop? It's up to you to make the decision.

Price: 486/33T from £4,235 for a single 5.25-inch drive, to £6,625 with 420Mb SCSI hard drive. 386/25 from £1,855 for single drive, to £2,585 with 110Mb hard drive
Availability: Now
Target users: Medium to large businesses
Contact: Wyse Technology: 0734 342200
Perceived competition: High-end 386 and 486 systems

Target users: Anyone who needs more computing power for applications such as spreadsheets, CAD and graphics programs
Contact: IIT: 0628 890984
Perceived competition: Intel

Feel the width

PRODUCT: High-speed, wide-carriage dot matrix printer
NAME: Seikosha SP2415
COMPATIBILITY: ST, Amiga, PC

Seikosha has launched a 9-pin dot matrix printer with a wide 15-inch carriage, that's a full five inches bigger than the average printer.

With a maximum printing speed of 300 characters per second (cps), it averages between 200 and 240cps in draft mode and 50cps in near letter quality (NLQ) mode. Print resolution can be as high as 240 dots per inch (dpi).

Emulation is provided for both the Epson FX1050 and IBM Proprinter XL, ensuring compatibility with a wide range of programs such as Lotus *1-2-3*, *PageStream* and *Caligrapher*.

Five typefaces have been included – Courier, Prestige, Gothic, San Serif and Script. Each can be used in a variety of styles – including italics and bold – and pitch sizes.

Other features include push tractor and friction paper feeding. There is also an 18K printer buffer to cope with large amounts of incoming data. The printer has both parallel and serial interfaces.

Price: £376
Availability: Now
Target users: Businesses and users who do a lot of printing and need a fast, wide-carriage dot matrix printer
Contact: Seikosha: 0753 685873
Perceived competition: Other dot matrix printer manufacturers, such as Star, Epson and Mannesmann Tally

Colour Postscript

PRODUCT: 24-bit raster image processor (RIP) cards
NAME: Photoscript 24 card range
COMPATIBILITY: PC, Mac II and upwards

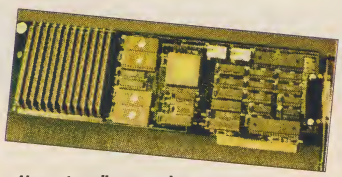
Synergy UK has developed a range of 24-bit raster image cards for the PC and Apple Mac, enabling virtually any colour printer to be PostScript compatible.

It has been designed to meet the needs of corporate users for high-quality, PostScript-compatible colour printing.

The cards are based on Weitek's 25MHz XL8220 chip combined with a PostScript-compatible interpreter and NIMBUS Font Library interface. Up to 48Mb of RAM is provided for image processing and buffering.

As well as this, both cards support networking, enabling all users on a LAN (Local Area Network) to share access to colour laser printing. If needed, a Windows 3 driver is included that brings full-colour printing capabilities to colour PostScript applications, including *Pagemaker* and *Ventura Publisher*.

Price: PC version £2,250; Mac £2,500
Availability: Now
Target users: Corporate users
Contact: Synergy UK: 081-421 2802
Perceived competition: Manufacturers of PostScript printers, eg, Spectrastar



• Now virtually any colour printer can be given colour PostScript output, accessible through ordinary applications software.

Bravo AST

PRODUCT: 386SX/20 workstation
NAME: AST Bravo 386SX/20
COMPATIBILITY: PC

AST has launched a desktop computer designed primarily to be used as an office workstation. Owing to the success of its 16MHz 386SX machine, the company has now released a machine with a 20MHz version of the processor.

The Bravo 386SX/20 features 2Mb of memory, which is expandable to 16Mb. While the system is available in a variety of configurations, the top-end package consists of a 40Mb hard drive, AST Super VGA display card, DOS 3.3, Windows 3 and a Microsoft mouse.

Expansion comes courtesy of five ISA expansion slots.

Price: £1,645
Availability: Now
Target users: "Specifically the office workstation user," says the company
Contact: AST: 081-568 4350
Perceived competition: Suppliers of LAN workstations ■

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EXPRESS MAIL

Welcome to the liveliest letters pages in computing.

This week, Haydn Fitz-Williams prints your thoughts on that Sam Tramiel interview, comes across a neat idea for cutting down on piracy and offers you the chance to ask questions to the biggest people in the biz...

Atari TOS

I love it, I honestly do. 'We'll blow Commodore away' says Atari boss, Sam Tramiel. What's with Uncle Sam? All that excess wind you've obviously got. If you ask me the entertainment sector has just about been wrapped up by Commodore and there's nothing Atari can do to stop it.

Price decreases have little effect and souping up the machine again will have even less since the software will always be produced for the lowest common denominator.

Yes I do own an Amiga, I got fed up with my Atari STM. It seemed that not a week went by without a price change or change in specifiction and not a thing was done for all of us with our single sided drives and limited colours and sound. At least it will be possible to upgrade chip sets in amigas and attach drives for CDTV compatibility albeit at cost.

In short, I feel that Atari is just out to screw the public for its money and then move on regardless of those with outdated machines. Commodore actually seems to appreciate those who have bought its machines and in this way will earn brand loyalty.

Steve McCartney, Ayr, Scotland

TOO TRUE too true. Atari does seem to have screwed up somewhere along the line with the ST range. But it still rates in my book as one of the most innovative companies; I can't think of any other that produces such a wide range of kit – from the Lynx to Transputers.

But the new range of STEs looks OK to me. It's a pity Atari left it so late to get it right.

Atari jokes

I read with some amusement the Sam Tramiel interview. After I'd finished, I looked back and wondered what the man had actually said. The word 'wow' seemed to dominate most of the proceedings. This aside, I reckon Mr. Tramiel must be a very worried man. Sales of the ST are slipping and the company seems bent on moving into more rarified waters – I mean where's the market in transputers and Unix workstations? How can it concile its reputation as a games company with its PC range? Frankly, I don't think Atari stands a chance.

Lastly, the bit the that got me was the reference to a 64-bit console. Atari describes the Lynx as having 32-bit sound – this because it uses four 8-bit channels! Does the same go for the Jaguar – four 16-bit video chips?

Martin Turner, Twickenham

YOU COULD WELL be right Martin – we'll just have to wait and see. The remarkable thing about Sam Tramiel is that he's prepared to put his foot where his mouth his. In my opinion, it makes for a great read as you know he's going to be effusively controversial.

The other thing I like about him is that nine times out of ten he comes up with the goods – though whether you can actually get your hands on them is a different question entirely.

Atari News

Congratulations on a great interview with Sam Tramiel – it's good to hear the latest news from the horse's mouth, so to speak.

While I admire Atari and its ST range, I can't help thinking that any new ST machines would be better off being launched under another name. The number of models out there is getting confusing. If a new machine was called the Atari, for example, it would benefit from software that didn't have to be downwardly compatible with the earliest ST models. The result being that games and the like could compete more effectively with the Amiga. What do you think?

Colin Spencer, Brighton

SOME UNKIND commentators would claim that Atari should change its name. Period. But I'm not one of them.

I guess the company's problems really started with the STE incompatibility debacle which it still claims was just a unsubstantiated slur whipped up by biased journos.

But even though that's now firmly behind them, I agree there's merit in your suggestion to rename the new additions to the range. While this might succeed with new users at a high street level, I doubt whether ST watchers and owners would ever forgive them.

Crackware

OK! Regarding the continuing saga of pirate software. Yes it is wrong to pirate it, but how many times have YOU purchased software based on reviews, advertising hype and a five minute bash in a computer shop, only to find it is too complicated to use, or totally user unfriendly, or even just a load of crap! Even worse is when you purchase by post with the same problems.

I find that obtaining a good pirate copy to evaluate, over a reasonable period before purchase, is the best way to overcome the above.

With commercial software costing up to £300 per package

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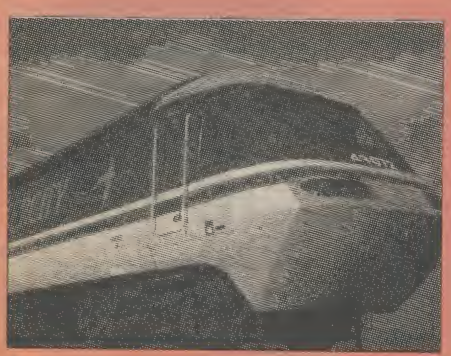

• Want to make millions? All you need is one high speed train, a laptop and a portable printer!

13 Here's a splendid way to use your computer to make a mint. I own a Toshiba laptop that I bought more for the poseur value than practicality. When I was sacked from my last job part of my pay-off was to keep all of my stationery. Because of a cock-up with our ordering procedures this included a portable briefcase size inkjet printer and a post script laser.

Travelling on the train to interviews I noticed there are carriages full of people with good clothes and portable phones beyond the buffet car. I visited these monied people with my laptop and printer and offered on-train secretarial services. This was so successful that I have since roamed the rails, typing a letter here, taking a memo there and making a tax free mint while never far from the buffet.

Carl Graham, Leeds

14 Unable to find that most famous of medieval stringed instruments I had to settle for a fifth hand George Formby Junior Ukelele. With this packed carefully in my duffel bag, I proceeded to King's Cross and caught a train to rural Cambridgeshire where I bought fine Cheddar and a flagon of still farmhouse perry. I stood in a field on the outskirts of Peterborough and played my substitute lute.

After an hour or so, tractors started to appear from all directions. Massey Fergusson, John Deere, JCB, Fordson, David Brown and even a couple of traction engines and the odd Sentinel Steamer. So there you have my story. How to Lute a Tractor without even using a real Lute .

Johann Reamwell, London

ON THE COUCH

This week *Express* psychiatrist Dr. Clare Anthony examines the inner reaches of NEIL PAGE from CHESTERFIELD. All the lucky lad had to do was to write in with the machine he owned, his favourite software and the machine he most wanted to own. Now, for his sins, a fiver is on its his way to him. So if you drop a line to Leather Couch Clare, *New Computer Express*, 30 Monmouth St, Bath BA1 2BW, you could be next!

OK Neil, lie down please, close your eyes and think of England – fine, now just concentrate on the hypnotic swinging of my pendulous....
● MACHINE OWNED:
Amstrad PCW (+ 768K expansion)
● FAVOURITE SOFTWARE:
Locoscript 2 (+ extra fonts)
● DESIRED MACHINE:
Mac IIfx and laser printer

This is my first encounter with a PCW owner and I can tell straight away that ineffective communication is the root of your problem. You see, Neil, the fundamental purchasing decision involved in choosing any machine is defined by the Id. Your choice of a PCW is quite clearly a reflection of your deep seated urge to become a writer. However, as we Freudians know only too well, the need to write is a sublimated sexual urge of the oedipal variety. Your PCW is the maternal womb, your text input the pre-orgasmic flow and your printer the ejaculatory mechanism. Public decency precludes me from commenting on your RAM expansion.

The extra fonts are, of course, empty iconographic entities deployed as a means of conveying style at the expense of substance. You see, Neil, word processors are more than just text engines; they are psycho-sexual devices quite capable of draining the very last drop of creative juice from developing super egos. So watch it!
PROGNOSIS: Thankfully you have correctly identified your own prognosis. As a writer though, just remember that the very words you use, and hence their marketability, are a product of the technology employed to create them. So, sell the PCW to a local vicar for £5695+VAT and buy a MacIIfx.

this can save you or your company a great deal of money. Perhaps when software houses realise this then no longer will manuals be so complicated and software so unfriendly, or so heavily loaded with features that no normal user wants or can comprehend.

Michael Wilson via Aspects

ALTHOUGH I agree with the gist of what you are saying there is a danger in this kind of argument in that it rests on the assumption that people will gladly pay the readies once they've established the software is the one for them.

I reckon the next correspondents letter sets out a more practicable alternative...

Try and buys

ONE OF HAYDN'S £5 WINNERS

Since the piracy debate seems destined to run for as long as the 'my computer is sexier than your dolphin' debate, I thought I would add a few comments.

I freely admit that I have played pirate games and even have a few around the house. There can be very few people in the computer world who can honestly say that they have never put a disk into their drive unless it was totally legitimate.

Pirates, excluding hackers, seem to fall into three categories. There are the 'stamp collectors', who have boxes of disks that they never have time to play because they are too busy collecting more. The second category is the so-called yuppie pirate as detailed in your pages the other week. They rip off applications software and use it in a business environment.

The last category, to which I claim membership, treats pirated software as a demo version. As I play adventure games, I will probably only start one or two new games a month and it is important for me to choose the right ones as they all cost £25 to £30.

So when I find the games I want to play, I buy them – I want the original manuals, maps, etc. I realise that what I do breaks the law, however, I intend to continue ensuring that I get value for money by buying the games I will want to play. To my mind I am supporting the programmers of the better games rather than the indifferent ones.

This brings up the thought that if useable demos of these games were readily available then I would not need to see the pirate copies. All shops selling the full price game should carry demo versions at a cost of 50p – £1. If you don't like the game, you use it as a blank disk. If you do like it and want the full game, you return the demo to the shop and the cost is discounted from the purchase. From the shop's point of view the demos should be fully sale-or-return and would encourage customers to use the shops rather than a mail order firm.

It is a system that would be applied to arcade games as well as adventures and I think it would have one very real advantage. It would gradually weed out poor games as people would try the demo and then not buy the original. If there was no demo available then everyone would know why. In the long term the writers of the best games would get the recognition they deserved and the general quality of games would be raised.

Paul Bates, Derby

A GREAT IDEA and one which I will try and get the European Leisure Software Publishers Association to take up. There seems to be an awful lot of criticism levelled at the software houses over pricing and product quality and not a great deal of productive feedback.

Games prices are too high and I believe only half a dozen or so of the hundreds of titles released each year are worth investing time in, let alone money.

Of course the net result of such a demo scheme would be that duff stuff, and the companies promulgating it, would fall by the wayside, but isn't that what we should be trying to encourage?

Liberator

Imagine this scenario. One person buys a copy of *Express* and lets 10 of his friends read it. Therefore by your backwards logic depriving newsagents of £8.88. Do you really expect us to buy 10 copies of *Express* H F-W?

My argument is it is not always a case of 'We can not afford it that is why we do it' but more of a case of 'We do not buy 10 copies of the same *Express* when we can read a friends so we will not buy 10 copies of the same piece of software when we can copy a friend's. So when you stop people letting their friends read a copy of *Express* without buying it, this is when I stop liberating .

A poor software liberator

SURELY THIS is a false analogy since a more accurate comparison with piracy would be if you photocopied 10 copies of *Express*. Alternatively, I might argue that if 10 friends read your copy of *Express* then you should lend those same 10 friends a game you've bought. Either way your analogy doesn't wash.

At the end of the day, I suspect nothing I say will deter you from illegally copying games if you have the means. Meanwhile I can only hope that software houses start producing cheap demo disks for perusal prior to purchase. Then at least the economic incentive to copy might disappear. ■

ASK A QUESTION AND WIN A FIVER!

Yep this is your chance to put your queries to some of the world's leading computer companies. Over the summer, Express will be conducting a series of interviews with some of the biggest names in the biz. And we want your contributions!
Here's the list of the top manufacturers and developers we'll be talking to:

● Acorn ● Amstrad ● Apple ● Atari ● Commodore ● IBM
● Intel ● Microsoft ● Motorola ● NEC ● NEXT ● Nintendo
● Panasonic ● Philips ● Sega ● Sharp ● Sony ● Tandy

The theme of the series is 'Towards 2000', so we'll be asking the UK bosses of these firms to tell us where they've been, where they're at and where they're going. And along the way there's bound to be an opportunity to ask a lot of niggling little questions you've always wanted ,but never found in print.

So now's your chance to find peace of mind and win some dosh into the bargain! All you have to do is drop a line to 'Industry Interviews', *New Computer Express*, 30 Monmouth St, Bath BA1 2BW and we'll do the rest. But hurry, we want to get this off the ground as soon as possible!

Write Now

Write and tell Haydn Fitz-Williams what you think! Reach him at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE and remember, only SOME letters win a fiver!

On-line mail

Own a modem? Then squirt us a letter. *Express* has its own area on Aspects bulletin board (061 792 0260) where you can leave mail and upload/ download files.

We also have our own conference on CIX. Why not give this on-line service a ring on 081-390 1244 and talk to us direct!

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AMIGA

- **Over 3,500 new roads covered in GBRoute Plus**
- **Storm erupts over HB Marketing's new genlock unit**
- **Programming problems delay launch of TFMX 2**

GBROUTE PLUS UPDATE

Fans of Complex Computers' critically acclaimed *GBRoute* route planning package will be pleased to learn that the upgrade *GBRoute Plus* isn't far off now.

Complex had originally intended to have the upgrade ready for release about now, but it has been plagued by problems since its development.

Most recently, the company's Amiga 3000 containing the source code and data for *GBRoute Plus* died owing to a faulty power supply. Obviously the developers could not afford to wait weeks for the machine to be repaired,so Complex attempted to replace the power supply itself.

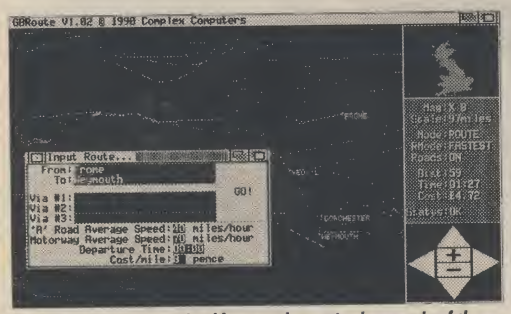
Problem number one – the power supply costs a whacking £270.25.

Problem number two – Commodore's parts supplier didn't have any in stock.

As you can probably appreciate, the chaps at Complex are not a happy lot.

As a result, Complex has now ripped the hard drive out of the Amiga 3000 and wired it up to an A590 connected to an A500.

With the ball now rolling again, *GBRoute Plus* should now arrive sometime in August for about £80. Oh yeah, you'll also need at least a megabyte to run it I'm afraid, so isn't it time you upgraded?



• **GBRoute Plus *is considerably more than a simple upgrade of the original program, and has been virtually rewritten to include more than 500 per cent more route variations..***

GBRoute Plus isn't simply an upgrade of *GBRoute* as had originally been intended. Instead, Complex has practically rewritten the system from scratch, learning by its experiences with the original *GBRoute*.

As a result, *GBRoute Plus* is an almost completely new product which will allow Amiga owners to get from A to B within the United Kingdom faster than any other program on the market.

One of the main complaints levelled at the original *GBRoute* was that it totally ignored all roads other than major roads such as motorways and 'A' roads. Thankfully, this has now been rectified with *GBRoute Plus* handling both 'B' roads and even some major 'C' roads which can make the advice it provide far more reliable.

This means that the program now covers 6,500 roads as opposed to the original's 3000. There are also now considerably more places included. The original only had 3,500, but Complex has knocked this up to a whacking 15,000. With all this extra data available, Complex claims that the program can now generate over 20 million route variations as opposed to the original's 3.75 million variations.

However, the improvements to *GBRoute* aren't just in the terms of increased volume of information. Other enhancements include:

- Extended 'via' support – you can now specify two extra via locations.
- Improved journey costing – enter the price per gallon of petrol and the 'miles per gallon' rating of your own car.
- High resolution screen support – which means a more detailed map!
- A filled or vector map display.
- ARexx support, automatic inverse when printing a map.
- Mouse zoom.
- Scale ruler display.
- Ordinance Survey co-ordinates and a lot more besides.

☎ Complex is on the other end of 0706 224531.

GENLOCK STORM ERUPTS

A storm has erupted surrounding the recent release by HB Marketing (☎ 0753 686000) of a genlock device that shares more than a passing resemblance to another unit on the market. HB's PAL Genlock (which was reviewed a few weeks back in the pages of *Express*) looks and seemingly performs almost identically to the critically acclaimed A8802 genlock from Rendale (☎ Contact Marcam Ltd on 0604 790466).

Many reviewers and users alike have noticed that the genlock not only looks identical to Rendale's unit, but it is also happens to contain a Rendale-manufactured PCB which has 'A8802' etched onto it.

Putting two and two together (and getting five!), most people naturally assumed that the genlock was a rebadged Rendale, something that is most certainly not true.

What is true is that the boards were originally manufactured by Rendale, but they were most certainly not designed

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for the purpose that they now serve. Rendale built the boards for a company called Octa which wanted to use them to connect the Amiga to overhead projectors. Unfortunately, Octa went bust and its assets were sold off to interested parties.

Among those that benefited from Octa's demise was HB, which bought the boards and commissioned a third party developer to modify them to work with a standard composite signal from a domestic video recorder.

Unfortunately, as Rendale is very keen to point out, the developer didn't quite get it right. Although they seem to work fine, there are major problems with the modified genlocks, Rendale claims. Unfortunately, so as not to alert the competition to the exact nature of these problems, Rendale is declining to comment on any particulars.

Most software will work with the genlocks without problem, but Rendale has already found that some software will not work – ProVideo Post, for example. Another problem with the genlock for professional users it that it does not have all the features of the A8802 – mode switching for example.

Further more, Rendale will not offer any form of support for purchasers of the unit. And if you want to upgrade the unit to something like the A8806 or even Rendale's new A8802 S-VHS genlock at a later date, this is totally out of the question.

Rendale is justifiably miffed about the whole affair, especially as HB has packaged the boards up inside a case which is virtually identical to Rendale's own unit.

This is perhaps the one thing that has annoyed them the most – if the boards had been put inside a new case perhaps things would not have escalated to their current level.

TFMX 2 DELAYED

There's some bad news for those of you who are eagerly awaiting the arrival of Demonware's all-inclusive TFMX 2. According to the UK distributor Digital Distribution International, the German developer has encountered problems during development. As a result, the program won't be made available until September – possibly even October.

The vast majority of the program is now virtually finished, but Demonware is hard at work pulling it all together into a single, usable environment. The new program features vastly improved sequence editing, full MIDI support and synthetic instruments.

☎ DDI is on 0753 686000.

AMOS EXTRA

After much deliberation, I've finally managed to lay my hands on both the *AMOS Compiler* and *3-D Extension*, thanks to those nice people at Europress Software.

I'm still playing with both at the moment, so I'll reserve my comments on them until I get around to writing a full review which will appear within future pages of *Express*. What I have seen is certainly very impressive. Stayed tuned.

Jason Holborn

ST

- **Upgrades are worth a few months gaming sacrifice**
- **All the sounds you'll ever need: mail order sampling**
- **Can Midwinter 2 live up to the enormous hype?**

BRAVE NEW WORLDS

An interesting letter crossed my cluttered (but lovingly tooled) desk this week. It came from a young chap called Ian Clemments who was bemoaning the fact that all the best programs only seem to run on 1Mb machines, or if they do run on less memory, then it's with reduced options.

I strongly sympathise with Ian, but only to an extent. You see I realise that there's a recession happening at the moment and money's too tight to mention, but it is feasible to gradually increase the power of your ST without breaking the bank.

For example memory upgrades have never been cheaper. The hardware companies are feeling the pinch of the recession too, so their prices have dropped and dropped.

In fact, only last week, Ladbrooke computing informed me that it has a

Continued on next page ➤

SENDING SAMPLES THROUGH THE POST

If you don't own a sampler, but would quite like to incorporate some snazzy sounds into your demos or games then I have some good news for you.

A company going by the name of Sonix has just set up shop. Its business is creating samples for you from your fave sound sources.

The guys can turn practically any sound into digital reality for a very reasonable price. The costs are: 0-2 seconds £1, 2-10 seconds £1.50, 10-60 seconds £2 and over 60 seconds £2.50. Bung 50p on for postage and you could soon be in sample heaven.

If you fancy getting digital, send your sound originals to Sonix, The Lodge, Delly End, Hailey, Witney, Oxon, OX8 5XD. Remember to specify what sample rate you'd like to use; choose from 16KHz, 22KHz and 32KHz.

The higher the hertz rate, the better the sound of the sample, but similarly the bigger the size in memory.

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◄ continued from previous page

4Mb RAM upgrade board which it is flogging for £160.

Now £160 is a lot of dosh, but look at the situation in these terms. Let's say that you buy one full price game a month. That's about £30 every time you stroll into your local software emporium full of hope and the desire to be entertained. A quick bit of maths reveals that within five and half months you'll have enough to buy the upgrade.

No-one likes being without games, but lets face it, how many games have you purchased this year with which you've been completely happy? I'll bet that its no more than two.

So be a bit more discerning. The next time you think that the latest zappy shoot-'em-up looks really groovy check out a review of it; you never know, you could have a 4Mb machine within a matter of weeks.

FRUSTRATED PACKERS

Demo writers are funny creatures. The wibbly demo writing scene is a sub-culture unto itself. Guys bash away at their assemblers trying to get the most light-shaded funkadelic parallax scrolling bitmapped graphics feasibly possible onto an ST screen, all just to out-do other wibbly demo writers.

The point is that a few of these demo writers go on to become doody games writers, therefore it's no bad thing to encourage them.

One PD library is doing just that. Let's say that you've written the mega-demo of the decade, but unfortunately you can't fit the whole thing on one disk. Enter stage left, The Source PD library.

The guys at The Source can solve your packing blues. They've laid down the gauntlet and reckon that they can pack anything. Before you bombard them with top heavy hols suitcases, bear in mind that they mean software.

This packing is completely free of charge. Simply bung your efforts on a few disks and send them to The Source at 7 Shearwater Lane, Norton, Stockton-On-Tees, Cleveland, TS2D 1SH.

•

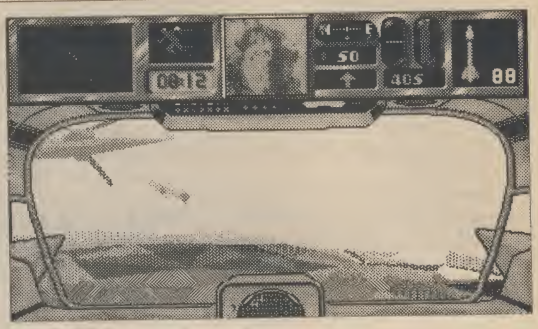
IS MIDWINTER II SLOW?

So, it's finally here; *Midwinter II*, the game that's received more hype than 'green' washing up powders; the follow up to one of the best action/strategy games ever to grace an ST monitor; the game that Maelstrom has been slaving over for nearly two years.

In *Midwinter II*, you devise and name your own secret agent. He or she then has the unenviable task of liberating 41 islands from the despotic hands of the Saharan Empire. The game can be played two ways: campaign or raids.

The campaign option involves playing a long game, slowly liberating islands and cutting off the enemies' supply routes. Then, when you're sure you have enough resources to defeat the Saharans, you launch your Armada and see if you've got what it takes.

The Raids option involves slowly picking off the islands. Each island is a different mission and offers a unique set of problems. Some involve turning the people to your way of thinking by infiltrating the police and army, while others involve blowing up the opposition.



• Midwinter II is a very worthy game where you can appreciate the effort that has gone into the programming. What lets it down is the fact that an inordinate number of screen updates make the game very slow.

Hence all styles of play are catered for. If you fancy a quick blast, then simply pick an angry looking island and parachute onto it. If you want to do things the hard way you can play the campaign option and complete the game in about a month.

There are 22 different forms of transport/vehicle. These range from a relatively normal jeep, right up to a flying submarine or a rocket pack. Each vehicle is suited to a particular form of combat; the mini-subs ease of control is invaluable when you want to knock out a sub-base, while the zeppelin is useful when there are helicopters to destroy.

With 41 missions to complete (a small island will take you a day), there's plenty to do However *Midwinter II* has one major flaw. There's an inordinate amount of disk accessing. The gameplay is severely disrupted every couple of minutes. One minute you've just knocked out a squadron of biplanes and the next you're hanging around waiting for confirmation that of the bounty you'll receive.

Every time you enter a new portion of the island, there's another wait, while the game loads in more map data; every time you want to look at the map, there's a long pause; every time you want to change vehicles, there's a pause while its graphic data is loaded in. In short, you spend just as much time staring at a loading screen is you actually do playing the game.

Midwinter II has glorious graphics, and there's little doubt that creating a huge game-world is a difficult task; Mike Singleton is a seriously brilliant programmer. However with all those disk loads, the game becomes severely annoying. Bit of a shame really.

Andy Hutchinson

Andy Hutchinson is the news editor on ST Format, *the UK's biggest selling magazine for the Atari ST.*

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CPC

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- **Budget games that beat full price excitement**
- **Hacking made simple with the new Tearaway utility**

SO WHAT IS THIS CLONE?

There was a fascinating-sounding news feature in a German CPC magazine the other day. I say 'fascinating-sounding' because my German's a bit rough. But from what I can gather it looks very much as if some enterprising German outfit has come up with a CPC clone!

It looks not entirely unlike a SAM Coupé (it's white, and about the same size). It doesn't have tape or disk loaders built in, but it can load from either. The manufacturers reckon it's compatible with over 90 per cent of 464 software.

We're trying to find out more from this German mag right now, but our German is dodgy, and their English is little better. What we have managed to establish, though, is that we've both got fax machines...

What I don't know right now is whether this machine is just a one-off somebody has knocked up in their bedroom, or whether it's going to marketed in serious numbers. If the latter turns out to be the case, will it make it over here? What will Amstrad make of it? Come to that, what will Locomotive Software make of it?

The machine either incorporates AmsDOS itself (has it got CPC ROMs in it? Oooh er...) or some kind of AmsDOS clone at which Locomotive is going to be very interested in looking.

As I say, international talks are currently under way, ahem. In the meantime, the world holds its breath...

BEST OF THE BUDGETS

There's one major problem with being a professional reviewer of games - you never have to pay for any of them.

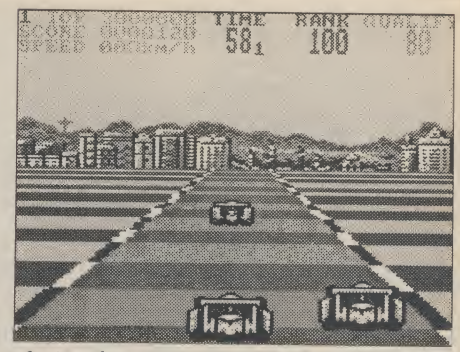
What, you think I'm kidding? You'd give your right arm to have an endless supply of free games? Let me put it this way: when you never have to pay for any games, you can easily lose track of value-for-money. In particular, you forget about all those good old budget games out there.

Most budgets these days are simply re-released full-price games. They're none the worse for that, either. As long as you don't mind waiting about a year you can get all those mega releases the press raved about when they originally came out for around a third of the original price.

The rest of the budgets are original product of, well, varying quality. Some are so excellent they put many full-price games to shame, while others can be distinctly iffy.

So if money is an object to you here's a brief round-up of some of the more impressive titles available at the moment which won't require you taking out an overdraft:

● One re-release that's brilliant value is *Continental Circus*, which Mastertronic is putting out at just £2.99. This excellent grand prix racing game scored a Mastergame in *Amstrad Action* about a year and a half ago, and it looks just as good now. It's fast, colourful, and with pitstops and varying weather it has plenty of gameplay.



• ***Continental Circus** was acclaimed on its release 18 months ago, so it's excellent value now that it's out at the budget price of just £2.99 from Mastertronic.*

● Another golden oldie, this time on the Hit Squad label, is *Arkanoid II – Revenge of Doh*. This has to be just about the ultimate *Breakout*-clone, with loads of levels and tons of collectable bonuses. It's all about as unoriginal as you can get, and a tad monotonous by modern standards, but it's still very well done.

● One game released on budget only is *F1 Tornado*, from Zeppelin. Although it's a budget game from start to finish (not just a re-released full-pricer) it's not at all bad. While the name makes it sound as if it's going to be some kind of simulator, in reality it's just a pretty standard scrolling aerial shoot-'em-up. The difficulty level is judged quite well, though, and there are collectable weapons to pick up.

● *Jocky Wilson's Compendium of Darts* is another budget-only game from Zeppelin. (You'd have to be mad to sell a title like that full-price!) It sounds absolutely ghastly, but in fact it's quite good fun. There are six varieties of dart game at which to try your hand, and in two-player mode it gets even better.

BIG SCREEN HACKING

Tearaway is a cheating/hacking utility which has been around for a little while, but with which I've only just seriously come to grips. It works in conjunction

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◄ continued from previous page

with Romantic Robot's Multiface, in much the same way as Romantic Robot's *Insider* program, letting programmers 'freeze' the machine's memory and then dabble around inside at will.

You can do this with the standard Multiface, but it's a bit limited. For a start, you only get a narrow menu bar across the bottom of the screen, and there's only so much you can do, hacking-wise. *The Insider* is a lot better, but even so it's display is pretty tiny. *Tearaway*, however, occupies the whole screen with its menu-driven interface...

It works like this: *Tearaway* loads itself into the Multiface RAM. Then the computer resets, and it's business as usual. Now, though, when you hit the red Multiface button, *Tearaway* suddenly fills the screen.

For the most part, *Tearaway*'s features are the standard ones for hacking utilities. One extremely useful feature, however, is unique. Called 'Null Value Option', it lets you search code for opcodes with unknown addresses – incredibly useful for finding pokes.

Since everything's loaded into RAM, there's no annoying disk accessing while you're working, but *Tearaway* does use 16K of the CPC RAM too, which can apparently cause problems with some multiload games. That aside, *Tearaway* is easy to use, well-presented and extremely powerful. It does need a Multiface II, though, and a 128K machine with a disk drive.

Tearaway costs £12.50 on disk only (£9.50 if you send a disk). Contact the CPC Network, 3 The Cottons, Outwell, Wisbech, Cambs PE14 8TL. Members of the United Amstrad User Group are entitled to a discount, by the way.

THE SIMPLEST CHEAT

Several people have written in with the same specific tip for multiload games.

Some games let you load in higher levels than you are meant to because they have a small 'header' with identifies the level – there's not much you can do with these. Others, though, simply load the next level on the tape once you've finished the last one.

To 'cheat', all you have to is check the tape counter at the start of each level, then you know where to fast-forward to load in those later sections. Neat, eh?

ONLY OUT BY £135

Sincerest apologies to Goldmark Systems over a – ahem – slight error in the column two weeks ago. Inflation might be bad these days, but the company's latest version of *Nirvana* did not leap up £135 to £150 overnight. It is still available at £15. Sorry!

Rod Lawton

Rod Lawton is the editor of Amstrad Action, *the UK's leading CPC magazine.*

C64

- **Exile: a classic without the help of the hype machine**
- **Instant success at Armalyte with our hot poke**
- **Which powerful puzzle game puts Puzznic to shame?**

Once in a while a game will come along and, without any prior publicity or hype, takes the market by storm.

Exile, from Audiogenic, is just such a game and boasts some stunning features. Read on..

The game is set on the planet Phoebus, where an exiled scientist (Triax) crash landed some time ago. Triax was blasted into space because he was a tyrant and a madman.

Since arriving on Phoebus he has been working on dozens of nasty experiments. His underground lair forms the basis of the play-area, which is inhabited by many of his genetically engineered thingies.

A crew of fellow space marines stumbled upon this outpost, and promptly investigated – nothing has been heard from them since their final distress signal.

Your mission (should you choose to accept it) is to rescue your comrades and ultimately recapture Triax.

The game begins inside your spaceship, which has just landed on Phoebus. Triax promptly appears and steals part of your navigation system, so the craft cannot be moved – oh dear!

Upon leaving the ship, you drop down to the planet surface and into the heart of the catacombs. Our hero (cue rapturous applause) has a vast array of tricks at his disposal; a jetpack, which allows free and fluid movement around the planet, a laser gun for minor problems, an icer which fires exploding bullets, an energy booster, grenades, a plasma gun, and a handy whistle (useful for controlling robots).

Most of these have to be collected, though, so it's not *that* easy at the start of the game. When collected an object can be placed in one of four pockets, providing it is small enough, and can be summoned using the keyboard or via an icon system.

Your jetpack and weaponry use energy, valuable energy. However, if one of your pieces of equipment is running a bit low then energy can be transferred to it from another item – very handy.

Another useful trick is the teleportation system; up to four

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positions can be memorised by the ship's computer, and you can teleport to any of these using a simple key press. When you lose all of your energy, you are beamed to one of these places, so technically it is impossible to 'die'.

Exile's playing area is simply vast, and would take a good hour or so to explore fully. Each adversary has incredible intelligence – there are some rather vicious birds, for example, which will follow you tenaciously unless you do something about them

The key to completing the game lies in a number of puzzles; owing to the freedom and flexibility at your disposal, any one puzzle could have more than one solution. There are key objects to be gained, some guarded by fire or doors, and 'messing up' your chances of success are relatively small.

Exile defies comparison, but loosely it is a cross between *Thrust*, *Pitfall* and *Phantoms of the Asteroid*. The main sprite is superbly animated (as are the other planet inhabitants) and is allowed a freedom of action rarely seen in an 8-bit game. The background graphics are a little sparse, but the *huge* map more than compensates for this.

From a scientific view, *Exile* is stunning; gravity is accurately represented, and chemical/physical reactions take place in exactly the way they do in the real world.

The thought and imagination behind *Exile* is incredible, and it shows. I would guarantee that *anyone* with a sense of adventure would be hooked for weeks. In fact, I stayed up for nearly 24 hours trying to solve just*one* puzzle!

An utterly amazing product which you'd be insane to miss, *Exile* is available now on cassette (£11.99) and disk (£15.99).

• Exile is a modern day classic: a huge playing area inhabited by superbly animated sprites. The realistic environment, coupled with a multitude of puzzles, provides hours of engrossing entertainment.

HOW TO SURVIVE ARMALYTE

If there's one thing that *Armalyte* isn't, it isn't easy. Type in this listing, SAVE for future use, then RUN it for umpteen squillion lives:

```
10 PRINTCHR$(147)
20 FORI=543TO631:READA$
30 L=ASC(LEFT$(A$,1)):L=L- 55:IFL<5THENL=L+7
40 R=ASC(RIGHT$(A$,1)):R=R-55:IFR<5THENR=R+7
50 V=(L*16)+R:C=C+V:POKEI,V:NEXT
60 PRINT"INSERT ARMALYTE CASSETTE AND..."
70 SYS543
100 DATA 20,2C,F7,38,A9,15,8D,B1,03,A9
110 DATA 37,8D,B2,03,A9,6A,8D,B3,03,20
120 DATA 6C,F5,A9,43,8D,27,C0,A9,02,8D
130 DATA 2C,C0,20,BF,03,60,48,A9,EA,8D
140 DATA A0,01,A9,4C,8D,A1,01,A9,5C,8D
150 DATA A2,01,A9,02,8D,A3,01,68,4C,E2
160 DATA C1,A2,0C,BD,6A,02,9D,7E,08,CA
170 DATA 10,F7,4C,1B,08,A9,AD,8D,57,EA
180 DATA 8D,F3,E9,A9,60,8D,7D,F7,00,00
```

GETTING KINDA' HECTIC

I played a wonderful game on the Amiga (sorry!) a while ago, called *The Power*, and now it has surfaced on the C64.

The game is deceptively simple; the main playing area is enclosed by a perimeter wall of large golden blocks. Inside this wall are a number of hearts, more coloured blocks and your gorgeous girlfriend.

On each of the 100 levels the aim is to collect all the hearts before a rendez-vous with your beloved. This is trickier than it sounds, as you can only move in four directions (up, down, left and right) and once you have started to move, you can't stop until you bump into an obstacle of some sort.

The coloured blocks can be shunted around the screen, the object being to place them in your path so that you rebound off them in the direction you want. But beware, certain coloured blocks will destroy each other when they make contact.

Each level, not surprisingly, is more difficult than the last, but certain awkward layouts teach you tactics which can be applied universally. It's the coloured blocks which cause most problems, however.

Two modes of play are possible: tactic displays the entire level on screen, whereas arcade shows only a portion. Both have their advantages.

The graphics are simple, yet clear and crisp, and there are some eye-popping scrolling backdrops. The soundtrack is thumpingly good – one to annoy the neighbours!

In all, a brilliant puzzle game which knocks *Puzznic* into a cocked hat.

Andrew Roberts

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SPECTRUM

- ST to Speccy converter promises super software
- The best budget game ever? Mercenary re-released
- What is the enigma of the greatest tapezine ever?

DOWNLOAD AN ST

Good news for Speccy and Atari ST programmers. An exciting piece of software is on the horizon, in the pipeline and generally set to hit the streets, as they say, soon.

Currently under development in a top secret research lab is a PDS system that connects the Atari to the Spectrum and ports 7K per second from the ST's printer port to our machine's edge connector. It comes from ESD, the producers of *Enigma* tape mag (see review below) and sounds like a veritable boon for the millions of programmers owning a Speccy and ST.

It's sure to make ST to Speccy conversions easier and should mean more software for lucky old us at the end of the day.

The PDS is in a working form even as we speak and if you own the minimum system requirements of an Atari ST520FM, Spectrum 48K and Hisoft's ST version of Devpac you can buy it now and upgrade later.

ESD has three utilities making up the PDS available at the moment; a Z80 assembler, a port program which transfers files stored on the ST down to the Spectrum and a program that comes on ST and Plus D disk and sends material to the Atari. This last one can be bought now for £24.99 and used without the PDS system.

The finished PDS package combining hardware and software should be out in late August. Contact ESD at the address below for more details.

CHEAP MERCENARY

Here's a cause for celebration. One of the best Speccy games ever has just been rereleased at a budget price.

Novagen's *Mercenary* is at this very moment languishing on the shelves of your local software emporium at the preposterously small sum of £2.99.

Mercenary is a huge, literally planet-sized, space opera which combines 3-D wire frame graphics, blasting, thinking and fathom deep gameplay to create a completely addictive playing experience. And no, I didn't copy that from the inlay; *Mercenary* just attracts this kind of fawning praise from all who play it.

The game is set on the planet Targ where you crash land and find yourself stuck in a war between two races, the Mechanoids and the Palyars. Most of the fun in the game comes from the way you have to double cross each side in order to escape the planet. It's vastly complex but not difficult and is just about the most enjoyment you can get for £2.99.

WE WANT LEMMINGS!

I noticed in *Games Week* recently that Psygnosis is planning to convert its acclaimed *Lemmings* onto every conceivable format save the Speccy. This is not a good move.

Surely if the Amstrad and Commodore 64 consoles justify an expensive cartridge based version then we poor, hard done by Speccy-owning types deserve *Lemmings* for our machine without delay.

Time and time again our faithful buddy has shown its worth with respectable and very playable versions of 16-bit originated games like *Carrier Command*, *Stunt Car Racer*, *Xenon* and *Battle Command*. A Speccy version of *Lemmings* could be very good and we'd all buy it in droves.

Write to Psygnosis at South Harrington Building, Sefton Street, Liverpool L3 4QB or we Speccy owners could be left horribly *Lemmings*-less for the rest of our lives.

THE RETURN OF ENIGMA

It seems like a good aeon or two since the last issue of *Enigma* tape mag was pushed through my letterbox. At long last a new one has been released and

HACK FRENZY: ALL THE LIVES YOU'LL EVER NEED

Our old pal and mucker, Alan Johns has sent in another telephone directory's worth Multiface pokes. The following are edited highlights providing immortality and very large scores in a variety of Speccy games. Thanks once again to Alan, A man working for the general good of Spectrum owners everywhere. Hurrah!

Super Sprint	40968,201	Always upgrade
	49359,201	Always qualify
Line of Fire	42616,201	Infinite lives
Puzznic	37913,0	Infinite lives
Hopping Mad	43760,0	Infinite lives
Edd the Duck	25489,0	Infinite lives
Bumpy	47771,0	Infinite lives
Kamikaze	28581,0	Infinite lives
Elephantics	62734,0	Infinite lives

Have you got any pokes or tips? Scribble them down and send them off to me, Robin Alway at the Spectrum Column, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW. Thanks.

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1531	Digital Debussy
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1534	NRG B
1535	Heavy Death Demo
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you'll definitely want to invest in a copy, I reckon.

As usual there's a wealth of things to read and play and, at £1.99 *Enigma* represents the kind of big red capital lettered Bargain Buy that you should be told about by the bloke who used to jump through the paper screen on MFI adverts.

On the reading side of things there's the usual well presented mix of news, tips, specialist columns, reviews and features. Once you've read that lot there's a bevvy of games shoe horned onto the cassette.

Adventure fans are well catered for with two good quality Tartan Software quests, *Prince of Tyndal* and *Escape*, plus the final part of the excellent *Jekyll and Hyde*.

But it's not all adventures; the hideously talented *Enigma* team also gives you *Hyperlane Plus* and *Snare!*, two original budget standard, joystick frenzy offerings. And if all that wasn't too much SAM Coupé owners get a bonus music demo which features "45 pieces of music, 3-D and tons of wibbling!!". You'd have to be a demanding sort and downright unreasonable to expect anymore on one tape.

Enigma is one of the best Speccy magazine around and you can get your copy for ú1.99 on tape (with save to +D/+3/Coupe disk option) from ESD, 15 Westfield Road, Inverurie, Aberdeenshire AB51 9YR. Make sure you do!

Robin Alway

PC

- **Intel's long-awaited 486-50 is finally a reality**
- **Learn to use Excel as version 3.0 reaches OS/2**
- **Symantec releases new Windows 3 Norton Desktop**

486-50 ARRIVES

Intel finally launched its 50-MHz 486 at the PC Expo, in New York last month.

It can process 41 million instructions per second (MIPS), according to Intel. By comparison, the 33-MHz 486 turns in a processing power of 27 MIPS.

Support for the 50MHz 486 will come from IBM, Compaq, NCR, Dell, etc. Intel is not promising delivery of the chips until the fourth quarter, though.

The company hopes that the 50MHz chip will help it deflect the challenge from RISC chips.

"At this point there's really nothing a RISC processor can do that something based on CISC architecture can't handle just as well," said Phil Octellini, vice president and general manager of Intel's microprocessor product group.

EXCEL MARCHES ON

Microsoft has shipped its OS/2 version of *Excel 3.0*. Running under the Presentation Manager interface, *Excel 3.0* for OS/2 sports the same menus and keystroke commands as the Windows and Macintosh versions. Files for all three versions are compatible as well. All the features introduced with the Windows version of Excel 3.0 have also been retained.

With *Excel* for OS/2, you can take advantage of OS/2's High-Performance File System to create long file names, and the system's memory management capabilities lets you create large or multiple worksheets. It also allows you to incorporate a menu item that lets them send and receive mail via IBM's *OfficeVision*.

Excel 3.0 for OS/2 costs £495. Users can upgrade from previous versions of *Excel* for OS/2 for £129. ☎ Contact Microsoft on 0734 500741.

A DESK WITH WINDOWS

Symantec has announced *Norton Desktop* for Windows, a Windows 3.0 package that provides file management and data protection utilities.

The package includes a collection of utilities that replace Windows' File Manager and Program Manager capabilities for faster and more streamlined file management.

The Quick Access disk utility sits directly on top of the Windows 3.0

Continued on next page ➤

BOOK OF THE WEEK: EXCEL MADE SIMPLE(ISH)

This week's book, seeing as Microsoft's *Excel* is being converted to every operating system under the sun, is *Quick & Easy –PC Excel* by John Adler.

Published by Compute! and spanning 208 pages *Quick & Easy* promises to, "go beyond simple spreadsheets" and, instead, "take advantage of the full power of *Excel*."

The book includes a command summary, a basic tutorial section, power-user tips, guides on how to create and use macros, functions and arrays and advice on using the Chart menu with your data.

By no means a definitive book on *Excel*, nor a very glossy or high quality publication, *Quick & Easy* is still a handy volume to have if you are after the essentials of *Excel* and fancy a few extra titbits to enhance your spreadsheet's performance.

***Quick & Easy – PC Excel* is available for £13.95 in the UK from bookshops and computer stores.**

☎ If you have problems getting hold of it contact Computer Manuals direct on 021-706 6000.

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◄ continued from previous page

desktop. You can copy, move, delete and unerase files simply by clicking and dragging on icons. The package also includes a 200-icon library and an icon-editor librarian in order to custom design icons.

Norton Desktop includes a complete version of *Norton Backup* for Windows, adding such new capabilities as allowing you to drag and drop files or entire drives to a 'Backup' icon.

Other utilities include SuperFind, which lets you select files by type or content, a file launcher and file viewers.

Both the *Norton Desktop* for Windows and *Norton Backup* for Windows are scheduled to ship in July, according to my sources.

A READER WRITES...

I had a letter (really) from one P B Ellis (Pam? Patrick? – come on chaps let's open those top buttons, kick off the shoes and get better acquainted, eh?) from Netherfield in Nottinghamshire.

P B is having trouble loading *ScanEdit* while using DOS 4 alongside Windows 386. An error message complaining of no memory appears.

The solution? Well, I always hated DOS 4. It grabs far too much memory for my liking.

Do yourself a favour P B and upgrade your DOS to version 5. Then you can load all of those nasty TSRs and Devices into high memory, have lots of room to swing several breeds of cat and probably save your sanity too. Trust me, I'm a doctor.

SHAREWARE RETURNS

Specialist shareware returns this week with part two of the HAM Radio recommended files. There are three disks to recommended this issue:

- First on this week's list is a HAM collection with the catchy name of G3ZCZ/W3 PC-HAM. It is a collection containing a series of data processing amateur radio programs mostly concerned with efficient log keeping:

Logbook is a fully menu-driven logbook program with a range of search and replace facilities. Resultant files are dBase compatible.

Whatson is an High Frequency propagation prediction program.

CQSS is a simulation of the ARRL sweepstakes contest of November 1968 for a station based in Maryland.

Contest is a program to automate contest logging.

- WA7MBL MAILBOX 5.14 which allows multi-tasking of the host computer so that more than one mail box can be run concurrently on the same computer sharing the same user and mail files. It requires *Desqview 2.0* or later. Hard disk recommended.
- FCC Exam disk covers the major elements of the US FCC exams at Novice, Technician and General levels. The questions are split up into 27 subject areas, and some areas are relevant to the UK exam system.

Contact: PD & Shareware Library, Winscombe House, Beacon Road., Crowborough, East Sussex, TN6 1UL.
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Paul Rigby

MACINTOSH

- **Apple's new portables set for an October release**
- **First hybrid fruits of the Apple/IBM summit**
- **System 7.1 set to revolutionise Mac networking**

NEW RELEASES

Informed sources say that the likely date for Apple's 1991 new products will be 21 October. This is when the company is expected to reveal three portables, a 68030-based Classic and two 68040 machines – a tower and a desktop model.

The three portables are expected to make the biggest impact. The current Mac portable has been criticised since its launch for being far too heavy, far too slow and far too expensive.

The new machines should silence these complaints – the low-end model will be almost identical to the Mac Classic in architecture, could well weigh as little as 5.3lb and should sell for under $2,000 in the States. The highest-spec portable will probably have much the same architecture – and speed – as the Mac IIsi.

What may cause some concern, however, is the fact that the low-cost portable will not contain a built-in floppy disk drive. Instead, an external drive is likely to be bundled with the machine. Although this gives the Mac advantages like a longer battery life and lower weight, beta testers have commented that carrying around an external floppy drive is a pain, and detracts from the 'sexiness' of the machine.

The other problem is that there is no output for an external monitor – something which many may find unacceptable. We will have to wait and see whether these two factors actually makes the machine a less attractive proposition – as far as I'm concerned, my order is already in for one of the first off the production line...

APPLE/IBM CO-PROJECTS

Apple's discussions with IBM (spit) reached a head a couple of weeks ago with a 'summit' conference between executives of the two companies at IBM's headquarters in New York.

Discussions related to three possibly actions:

1) Apple using IBM's RS/6000 RISC chip in future Apple computers

2) IBM licensing some or all of a new, processor-independent operating system being developed by Apple

3) A joint venture between the two companies to develop the new OS.

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Although nobody who was at the summit is prepared to comment, it's highly likely that some sort of alliance will emerge, and it's becoming more and more certain that IBM will, indeed, license some form of Apple operating system for its future machines.

SYSTEM 7.1!

System 7.1 is already a fair way down the development path, it seems.

One of the main new attractions will be built-in electronic mail. This goes well with the System 7 policy of file sharing and general 'networkability', but it may cause concern for companies such as CE Software. It has made much of its fortune from *QuickMail* and other utilities which are now becoming redundant as Apple incorporates their functionality into the standard System.

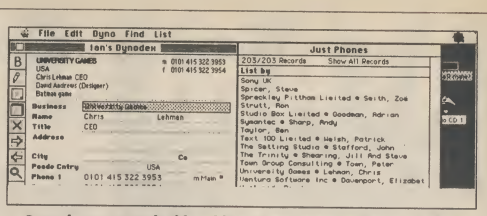
NEW CD-ROM PLAYER?

If you're thinking of buying a CD-ROM player, you should probably hang on for a couple of months. The signs are that Apple's new model should be with us before too long; lets just hope that it's a little more innovative than the original Apple offering.

In the meantime, if you can't wait to see what Apple comes up with, I'd recommend the Toshiba range.

I've been using one for some months now with no problems; the drive is fast, quiet and does neat things like auto-eject and insert CD-ROMs.

Price ranges from £600 to £700, depending on the model, and the higher-end machines feature digital and audio output sockets on the back, as well as a headphone jack on the front panel.



• **Dynodex:** ***an invaluable address-book program, now available from The Software Club.***

PRODUCT NEWS

Computers Unlimited has just been make the exclusive UK distributor for Portfolio Systems' new *DynoPage* utility, as well as *Dynodex*, the address-book utility.

DynoPage is a printing utility which prints any Mac file to any format. For instance, it has pre-defined templates for formats such as index cards, tri-fold letters and a wide range of label sizes. Users can also create custom templates if required.

Dynodex has been mentioned in this column before. It's a brilliant address book package which can output its data on to special Filofax paper. I can't get along without it – it beats all the other address book packages I've used into a cocked hat.

DynoPage and *Dynodex* are both £117.44, and the special DynoPaper costs £23.44. All three are available from Apple Authorised Dealers, or at a discount price from CU's retail outlet, The Software Club.

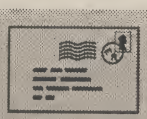
☎ Call 081-205 4548 for a catalogue.

Also just released is *QuicKeys 2.1*, a new version of its popular macro package which is fully compatible with System 7, as well as adding extra functionality for System 6 users.

☎ Full details – including discounts for bulk purchases – from Computers Unlimited on 081-200 8282.

Ian Wrigley

POSTCARD FROM AMERICA



The 16th West Coast Computer Faire crawled out of the silicon muck last June. It seemed much older and lamer than 16 years—perhaps show years are like dog years. The glory of past golden days, with debuts of ground breaking hardware and software, blew away faster than data in RAM. The name is all that's left of this once premier technology showcase of the microcomputer industry.

This year the sell-out theme was "the leading show for business computing." Business computing? Come on, who are they trying to kid? Perhaps they're using a very liberal definition of business – like the price of admission. Or per chance a coy, self-mocking parody of real trade shows. Bingo!

Nevertheless, there were a few interesting products:

Common-Link **by Pacific Micro is a utility program that allows PC users to read, or copy Macintosh disks. Mac users often find themselves unable to share their data files when their stuck in a PC-only shop.** ***Common-Link's*** **magic is done entirely in software, without special cables, or hardware. Unfortunately, the product only works with high-density 3.5 inch disks, leaving the more common 800K floppy out in the driveway.**

Common-Link, Pacific Micro, 201 San Antonio Circle, C250, Mountain View, CA 94040 USA.

Kres Engineering had a couple of products of interest to SCSI hackers. The Kres braintrust spoke a different dialect of lingua technoidal than I'm used to, so some details may be a bit fuzzy.

There are several flavours of SCSI, excluding the quicker SCSI-2, coming down the bus. The familiar SCSI allows a 18.2 foot chain, while the differential cable standard can send signals 82 feet away. Devices that use one type of cable can not usually communicate with the other type. The Kres SDC-100 is a converter that lets them talk to each other.

Kres Engineering , P.O. Box 1268, La Cañada CA 91012 USA.

David Morgenstern

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All STE Ram Kits come with instructions and DO NOT require soldering in most machines.

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Due to high demand sales, we have now run very low on stocks of the ST software packs below. Therefore, please ring for availability before ordering. For contents of the ST software packs - see the listing of ST computer ranges on the opposite page or phone us for details.

Discovery 1 Pack Software	£16.99
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ST Midi Software

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The amazing 32Mhz TT030 is now available in the following configurations :

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All of our printers come with a parallel cable to suit Atari ST, Amiga and all standard PC etc (other cables available at extra cost - ask for details). All printers carry a full 12 months warranty. We only sell genuine UK stock - we do not offer inferior "grey imports".

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Citizen Swift 9 (9-pin) *FREE COLOUR KIT*	£199.00
Citizen 124D (24-pin)	£209.00
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Star LC24-200 Black Ribbon	£7.50
Star LC24-200 Colour Ribbon	£11.00

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Canon BJ10E Portable Bubble Jet	£289.00
Hewlett Packard Desk Jet 500	£399.00
Panasonic KXP 1124i (24-pin)	£279.00

ACCESSORIES

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HP Desk Jet Epson FX Emulation Card	£59.99

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HP Desk Jet Ink Cartridge	£14.99
Panasonic KXP 1124i Ribbon	£9.00

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Amiga Stereo Scart Lead	£12.99
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ATARI STE DISCOVERY 1. consists of the Standard Pack and STOS, First Basic, NeoChrome and 4 games (Carrier Command, Space Harrier, Outrun, Bomb Jack)	£299.00	£329.00	£359.00	£439.00
ATARI STE DISCOVERY 2. consists of the Standard Pack and First Basic, ST Tour, NeoChrome and 4 games (Dragons Breath, Super Cycle, Indiana Jones, Anarchy)	£299.00	£329.00	£359.00	£439.00
ATARI STE TURBO. consists of Standard Pack and STOS, Hyperpaint II, Music Maker II, First Basic and 8 games (Indiana Jones, Dragons Breath, Blood Money, Impossible Mission II, HKM, Anarchy, Outrun and Supercycle).	£309.00	£339.00	£369.00	£449.00
ATARI STE TENSTAR. consists of Standard Pack and Asterix, Chess Player 2150, Drivin Force, Live + Let Die, Onslaught, Pipemania, Rick Dangerous, Rock n Roll, Skweek and Trivial Pursuit II.	£309.00	£339.00	£369.00	£449.00
ATARI STE CURRICULUM. consists of Standard Pack and also 3 levels of educational software (from 5 yrs to 50 yrs !!!), a word processor, a spreadsheet, a database, HyperPaint and Music Maker II software.	£319.00	£349.00	£379.00	£459.00

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AMIGA A1500 SOFTWARE 52MB consists of A1500 software pack and fitted 52mb auto booting hard disk drive.	£980.00	£1175.00	£1255.00	£1380.00
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WHOLE WIRED WORLD

Our man in many countries, Steve Gold, reports on the latest world wide developments including Sony's VBOX technolgy, new features for Amiga CDTV, the US software chart and Epson's new range of printers

EPSON UNVEILS THREE NEW PRINTERS, NEW CONTROL LANGUAGE

Epson unveiled three new printers and a new printer control language (PCL) to go with them at PC Expo in New York last week. The new printers will be launched in the UK this September, according to Epson UK. All three of the 24-pin printers feature the new PCL which is called ESC/P 2, a second-generation PCL that Epson hopes will persuade potential printer buyers to buy its unit rather than the cheaper competition.

Unlike the original Epson PCL, which virtually all dot matrix printers now incorporate as standard, ESC/P 2 will only be found on Epson units. There are no plans to license the technology to third party companies – yet. How long it will be before Epson gives up and releases the PCL into the public domain? In a nutshell, ESC/P 2 is the dot matrix equivalent of a page description language such as Postscript, as seen on laser printers. According to Epson, the PCL allows the more complex features of dot matrix printers to be easily used.

• *Epson's new printers are due this September and include a new printer control language.*

The PCL also boosts print speed by as much as 30 per cent, compared to older Epson models, the company claims. ESC/P 2 allows the new printers to produce shadows, outlines, double-height and double-width characters. The LQ-570, LQ-1170 and LQ-870 printers will retail for $499, $749 and $1,049 in the US, where they will ship from the end of this month. The 570 is a home unit, while the other two are heavy duty units, the 1170 being a wide carriage printer.

AMERICAN PEOPLELINK HITS THE fiNANCIAL BUFFERS

American Peoplelink – better known as Plink to its subscribers – looks like it has closed down as this issue of *Express* goes to press. The service has gone off-line on all circuits, including its voice and fax lines.

According to informed sources, the service was closed down at the end of June when it became clear that its financial problems could not be solved. The close down was secret, but planned, hence why all lines were shut down at the same time. The manner of the shut down caught many subscribers by surprise.

Plink was founded by a couple of on-line enthusiasts in 1984 after they became disgruntled with Compuserve's relatively high fees. The service was charging $2.95 an hour when it started, compared to the $6.25 that Compuserve billed its subscribers per hour. Plink found it hard going – the service shied away from the traditional methods of access in the US such as Telenet and Tymnet. Instead it used some of the more esoteric networks which proved to be a costly error.

Problems came to a head late last year when its primary method of access, Redinet, hit its own problems, forcing Plink's system operators to change to other networks very quickly.

All is not lost for subscribers to Plink's special interest group (SIG) services – several other on-line services, notably Mnematics and Portal are talking about forming new SIGs run by the sysops (system operators) of the old Plink SIGs.

NEW MEMBERS FOR ACE

The Advanced Computing Environment (ACE), the industry not-for-profit consortium working on specifications for higher-performance systems, has announced that its membership has grown by 40 new companies.

The consortium, whose original spearhead companies include Compaq, Microsoft, Mips and DEC, has been joined by 30 manufacturers of computer systems, including Corollary, Daewoo, Epson, Goldstar, Samsung and Sanyo. Several software companies have also joined the ACE consortium, the most notable being Banyan, which produces the Vines networking system. Three semi-conductor manufacturers – LSI Logic, Integrated Device Technologies, and Performance Semiconductor – have also joined.

So why all the activity? Simple – ACE has now released its 150-page ARC (Advanced Risc Computing) specification to members. The top-secret specification is a blueprint for the next generation of Risc-based computers. According to the BIX (Byte Information Exchange) on-line news service, the consortium is known to have set certain requirements for ACE machines. Hardware must be based on either a Mips or on Intel's 80386/486 microprocessor. For its first operating system, ACE has designated OS/2 3.0 and The Santa Cruz Operation's open desktop applications as operating systems of choice. BIX asserts that ARC-compatible systems will use either the EISA bus or DEC's Turbochannel technology.

Other planned features of an ARC system include a 1,024x768 pixel display and at least 8Mb of RAM fitted as standard. Microsoft and SCO claim that software development kits will be on the market shortly and that ARC-compatible systems will ship by the end of the year.

AMIGA CDTV TAKES ON NEW FEATURES

In what many view as an attempt to breath life into the Amiga CDTV project, Commodore has announced several new features for its new multimedia computer. All of the new features improve the unit's video capabilities. One new feature, CDXL, enables video images from a CD-ROM disk to be displayed on screen. CDXL can display about 12 frames per second, or half the number of frames normally used for full-motion video images. According to Commodore, no additional hardware or software is needed to use the CDXL feature – software developers simply need the specifications from Commodore to know how it all works.

• *Commodore's new features for its new multimedia computer could bring even more life to the Amiga CDTV project.*

WAR GAMES TOP SOFTWARE CHARTS IN THE US

According to figures just released by the Software Publisher's Association (SPA) in the US, war games continue to be the best seller in terms of US games software sales. The SPA defines games software as "sports, role playing, arcade/action, strategy/simulation, and family entertainment."

Simulation software, which includes war games and strategy games, were the biggest seller in the US marketplace, accounting for 35 per cent of total sales. Role-playing games, which used to be the biggest sellers in recent years, accounted for 26 per cent of total sales last year, with arcade-type games coming in third, with 22 per cent.

Most of the entertainment software sold in the US – 73 per cent – is for MS-DOS machines, with Amiga packages next, at 10 per cent.

SONY UNVEILS VBOX TECHNOLOGY

Last week Sony unveiled a new technology at PC Expo. The Japanese giant launched its Vbox peripheral, a unit that allows PCs to be linked up interactively to audio and video devices. The idea of Vbox, said Sony officials, is to allow a low-cost audio visual presentations studio to be assembled.

The technology behind Vbox was pre-announced at the Macworld Expo in January of this year, but this is the first time Sony has gone public with the technology, as well as demonstrating prototypes with software. At the PC Expo Sony's stand included new versions of *Mediamaker* by Macromind, *Showmaker* by Gold Disk, and *Audio-visual Manager* by TSE & Associates.

Showmaker, which Gold Disk says is available now, is the first of the three applications to hit the market. Sony says the new version of *Mediamaker* is expected to ship later this summer, while *Audio-visual Manager* is expected to ship next month. *Mediamaker* runs on Apple Macs, *Showmaker* runs on and *Audio-visual Manager* on PCs Windows.

Contact: Sony Computer Peripheral Products Tel: 0101-416-602-4000. ■

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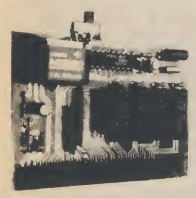

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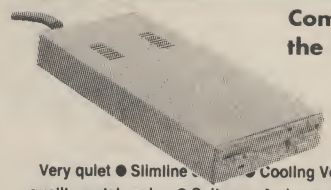

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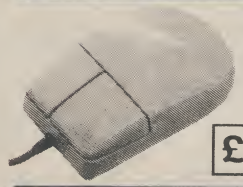

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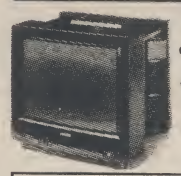

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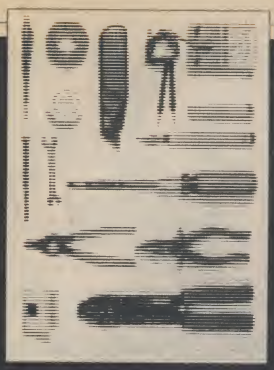


CIRCUIT CITY

We thought we'd seen about everything until we asked you to send in details of your outrageous machines. The results were so utterly bizarre that half of the editorial team is still hiding in the wardrobe

MEAN GENIE

Graham Berkman of Peterborough reckons that his Video Genie is the made of the right stuff. We'll let him tell you why:

I have been the proud owner of a Video Genie computer for more than 11 years. I have it linked to an expansion box – it now has a massive 64K of memory, two 5.25-inch disk drives and an Epson MX80 printer.

Computing for me is, first and foremost, a hobby. I enjoy the challenge of programming and, apart from using BASIC, I also program in machine code. In fact my first foray into machine code was before I possessed an editor-assembler and I poked values into memory from BASIC – what a chore!

While I cannot get excited about game playing on the computer, a number of games that I own are cassette-based and I have enjoyed many happy hours of frustration and elation in adapting the games for disk use. I have written a machine language version of Othello, but for me there was far more fun in the writing, testing, error trapping and debugging than actually playing the game.

As far as other programming is concerned my daughter was very fond of a number recognition program that featured Robbie the Robot who would either burp the requisite number of times or would waddle up to the correct number and boot it off the screen.

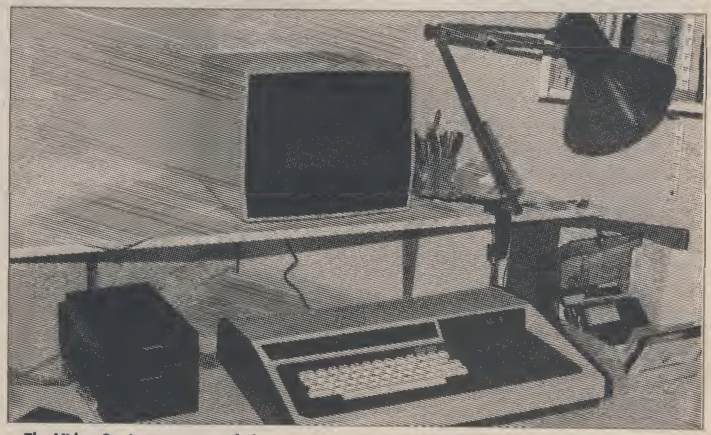
I suppose that would fall into the category of 'education'. My latest venture in this category, which is only in the very earliest stages, is for a Hangman-type program in which a spider on a thread moves down the screen towards a man and finally eats him.

Another program I wrote for fun, I now use as a utility. It's a composer that allows me to create a tune a note at a time, edit and modify it, save and recall it from disk (originally cassette) and also print out the relevant data. Having used the program to give a rendition of various tunes, from *Baa Baa Black Sheep* to *Fly me to the Moon* (which I used in a Lunar Lander program) I now use it to create sound effects for some of my other programs – hence my reason for considering it a utility.

While mentioning utilities, I have also written a screen design program that allows me to generate a design on-screen and then to dump both the design and the memory mapped values that produce the design to the printer.

Business use hasn't been forgotten, with car reports, telephone log sheets and cashflow forecasts being developed when needed. I also wrote my own word processor program, adapted from a magazine article, originally using BASIC, but then speeded up parts of the program by rewriting them in machine code.

There is a thrill in getting a program to work – the pain spent in planning, designing, coding and testing melts away as a program runs smoothly for the first time. At times I dream of the marvellous machines now available – super graphics, rainbows of colours, stereo sound, megabytes of memory – but there seems to be so much for me still to discover with my Genie. There's lots of life in the old girl yet! ■



• The Video Genie was state-of-the-art in its day, but nowadays it looks a bit dated with its 'teleprinter' cabinet, built-in cassette player and analogue signal level meter.

APRICOT BABY

Proving that owning an Apricot doesn't leave you in a jam, Mark Jefferson of Bitterne admitted owning Apricot's baby, the F1e. He takes up the story:

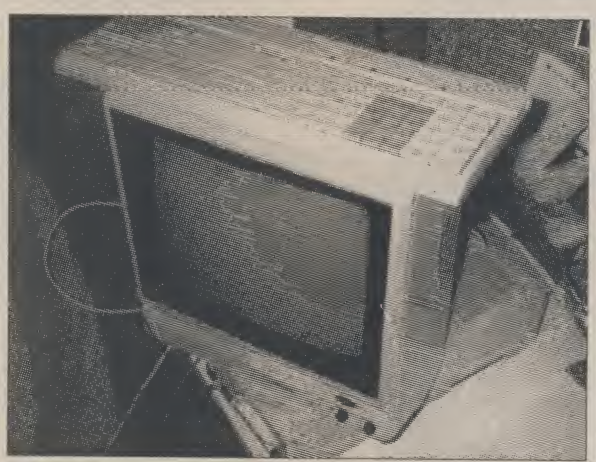
In your search for the most unusual and bizarre in computers, I think my old steed might interest you. Billed as Apricot's first entry into the affordable home educational computer market, the Apricot F1e proved to be its last venture into this market.

Offered as a hybrid of Apricot's F1 range, the F1e – the 'shoebox' as it became known, had a single-sided instead of double-sided 3.5-inch disk drive, an infra-red keyboard as positive as a plate of fudge, and absolutely no room for expansion. In fact it resembled fudge uncannily! To compensate for the unusual infra-red link constantly breaking contact with the computer, a plastic fibre-optic pipe was offered to link the two. Known as the 'light pipe', its brittleness was legendary, hence the liberal use of Blu-Tack in the photo above.

In fact it's hard to see how this machine sold at all, as it couldn't even be used with a monitor or TV without modification. This came in the form of a DIY video card some months after the F1e was launched.

Introduced in 1984, Apricot was lucky to see 1985, as sales were so low and the company needed major re-financing by the end of that year.

PS, despite all this, I'm still attached to my Mongrel of an F1, even though Startrite used it to design their shoe boxes. ■



• Apricot's first venture into the compact personal computer market brings an entirely new meaning to 'F1 to continue'. The Hybrid F1e was popular in homes and small businesses.

CASH FOR MACHINES

There are still accolades and bouquets and maybe even some cash for outrageous machines. We're still waiting for the biggest home computer in the world (the largest so far is about as big as a couple of filing cabinets). A chef threatened to make a computer wedding cake with formatted chocolate digestives for disks, but either that's not arrived or some obese Tech Ed type has gobbled it up.

Get out your whisks, eggs, flour and sugar and whip up a micro-cake. There will be a prize for the tastiest and best looking gourmet PC.

OUTRAGEOUS BARGAIN

Outrage doesn't stop at the machine. The price can be enough to raise an eyebrow or several, according to Allan D Mitchell of Aberdeenshire, who tells us how he managed to hang on to most of his cash and still walk away with enough office software to run a small business:

In my local branch of Dixons earlier this month I picked up *Sage Retrieve* III relational database and *Mini Office Professional* for my Amstrad PC for 49 pence each. Yes, I'll say that again, 49 pence each!

Now that's what I call a bargain.I look forward to being green with envy at everyone else's bargains too. ■

TECH TIPS

Does your laser suffer from too little memory? Do you want to protect your phone bill from the kids? Care to find out why *Express* is hotter than burning coal? Read Keith Pomfret's Tech Tips

HELP Memories

What's the minimum amount of printer memory that I can do serious art and desktop publishing with? I use a PC386 and am planning to buy a laser. The ones available locally have 512K on board but the shop girl says I need more to make them fly. How much more ?.

Dave Hadwin, Millom

SOME SAY that one megabyte's enough. The true answer is that the more memory you put in a printer, the better. In a recent review, a laser printer that turned its nose up at a 150dpi (dots per inch) output when only 512K of memory was present greedily gobbled up and spit out full 300dpi laser output when an extra 1Mb card was slotted in.

The memory is the most important thing, but you must also bear in mind the emulation when choosing a printer. The industry standard for laser printers is HP Laserjet emulation. Make sure that you choose a printer and software that are capable of using this.

If you are going into serious DTP, you'll need to think about a printer that is capable of PostScript emulation too. PostScript is the standard page description language

HELP IN/OUT/THRU

I was surprised that you answered one of your queries to Tech Tips wrongly. In *Express* 136, G Laing asked if a type of BASIC for the ST, which was specifically designed for MIDI, existed. You said there was no such thing.

No doubt, the 'experts' who you consulted do not read such magazines as *Music Technology* and *Sound on Sound*. They regularly review MIDI software in a depth and variety which outclasses the computer press. Both magazines received an ST program actually called *MIDI BASIC* by Dr T. It should be available from MCMZCIX on 081-963 0663. The program is said to contain routines particular to MIDI programming.

However, I have written several MIDI programs using *Power Basic* and, if you understand MIDI, it is relatively easy to do so. *Power Basic* and *Hi-Soft Basic* both allow you to inspect any bit of an integer using masks. For example, if you have added a checksum and have to complement it, then reduce it to seven bits for transmission, the command could be:- Checksum = (-checksum)and 8H7F. Cheers,

Fred Fee, Newport

THE SCREAMS from the basement as our experts learn the reward for being wrong are only drowned by the tortured sound of the CD as it grinds on tnrough another of Andy editor's Kraftwerk CDs. Thanks for the correction, although it would have been even better if you'd sent us examples of your own MIDI programming. We await the disk with baited breath.

TIP! Cashflow

How do I stop my teenage kids from running up a huge phone bill on my PC and modem while I'm out? As well as being financially damaging, they're logging on to all sorts of unsavoury places and recently I have caught them with downloaded software which has contained text files with graphic Anglo-Saxon sexual swearwords in it. Another batch of these files contained digitised photographs of men and women in various unnatural acts of copulation.

Isn't there a law against this?

Harry J Williamson, Portsmouth.

There are several pieces of password protection software available in the public domain. Check the lists of PD suppliers in *Express* for one near you. If you set your PC so that it will only boot after a password has been typed in. That should cut the phone bill.

Beware, though, if your kids have computers of their own. They may connect their machines to your modem. If that turns out to be the case, the simplest solution is to contact your local BT office and arrange to have Star Services call barring.

This costs a few pounds a quarter, but it allows you to disable your phone line so that you can choose if you want to allow no calls, emergency calls, local calls or any calls. You can set and unset the call barring as you enter and leave the house This only works on a digital exchange (yours is – we asked BT).

HELP The right type

I am graduating from word processing to document processing or desktop publishing and have a few pertinent questions. I consider myself computer literate and have graduated from C64 to PC. I have access to an ST and feel that the quality of documents that I produce could benefit greatly from a more powerful program.

What I need to know is what are the differences between a word processor, document processor and full DTP program? What is the difference between serif and sans serif fonts? I don't have the cash to take the Macintosh route so beloved of NCE journalists, but I'd like to think that if I did at a later date, I wouldn't lose all my work.

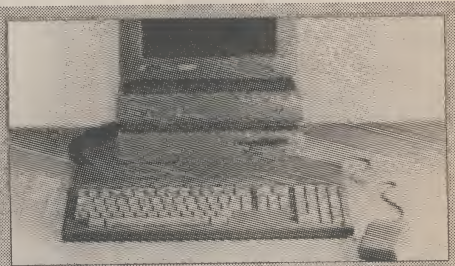
Nicolas Law, Rugby

There is no definitive line that divides word processors, document processors and DTP packages. The change from one to another is a gradual fuzzy process not sharpened by the willingness of the software houses to bolt any feature that they can think of on to a program.

In simple terms, a word processor can be looked on as a very clever typewriter replacement, allowing on-screen editing and a save and retrieve facility. Word processors come with spell checkers, thesauruses, mail mergers, on-screen fonts and attributes, multiple documents, tabling and indexing and some even have the facility to import images.The ability to lay out text in columns like a newspaper is becoming common too

It's at the point where the text is in columns and the pictures start arriving on the page that we should consider the word processor to have metamorphosed into a document processor. With these come scalable fonts, multiple point sizes and the beginnings of true page layout features. Again the definition becomes muddy and with multiple page layout, Post Script drivers and features to allow spot colour and full page colour, we get into serious DTP. The three categories of programs overlap and features from one may be found in another and vice versa.

The difference between serif and sans serif fonts is the curly bits on the ends of the letters. Publications aspiring towards traditional values tend to stick with the tried and tested serifs (buy a copy of *The Times* or *Telegraph* to confirm) while forward moving, sharp-edged publications (such as the one that you're reading now) tend towards the cleaner sans serif fonts.The two most prevalent fonts are the seriffed Times and sans serif Helvetica.



• Atari's Mega ST provides a cost-effective DTP workhorse for us aspirational types who can't afford a Mac.

If you save all of your text files as ASCII documents, then whatever document processor or DTP package you upgrade to, you will be able to import the text into your page layout.

In order to keep complete pages from a PC and input them into the aspirational Mac at a later date, you'll need to spend a few hundred pounds on a good DTP program such as *PageMaker*.

Then when you upgrade to the Mac the files can be ported into the Mac version of *PageMaker*, which is one of the few industry-standard DTP programs.

HELP FREE Program

Open University students (who are still 'with it') have now just passed the half-way mark in M205 *The Fundamentals of Computing*; and very interesting it is too. I have nothing but praise for the course team and the tutors in the south-east region.

One of the most recent tasks was a design for a simple line editor. It gave good practice in using procedures which were separately compiled in UCSD Pascal units called from the main program. It has a useful Menu offering five options – enter, change, insert and format. We were asked to design another to put in place of the format routine, to exchange two lines of text and with some input validation. However, it occurred to me that so far we have had no gen on how to output text to a printer using code in the actual program itself.

So, for what it is worth, I enclose a very short program which does the job and in its present form is a single-line printing effort, but could be implemented as a procedure with a For Loop to print a series of lines of text.

However, even in its present form it's useful for printing headline or comments from the p-System environment without having to Halt and change back to a word processor in the midst of coding, and quite good for immediate addressing of envelopes.

At a recent day school at Brighton an interesting discussion was sparked off about *Turbo Pascal* and recent versions which have a lot of extra facilities to mach the latest developments for PCs. Also it was very pleasing to find a new book, *Turbo Pascal* by Samuel L Maratech, one look at which makes the prospect of following up this year's studies of design and coding with *Turbo Pascal* in one of its forms good to look forward to.

Perhaps you could comment on some of the recent improvements and dispel the odd disparaging remarks sometimes heard from 'experts' who claim that 'only colleges and schools use Pascal, all modern programming is done in C or assembly language. Is this a fact?

J Williams, Hertfordshire

```
Program Printing;
{ A short routine for M205 students to output text
   to a printer - useful for the text editor maybe?
   (c).  John Grey, Eastbourne - 24/6/91 }

Const
          sentinel = 'zzz';  {type this in to end printing}
var
     printer : text;
     sentence : string [75];
     answer    : char;

begin
       rewrite(printer,'PRINTER:);
       repeat
             write('Would you like to use Condensed Print (Y/N) ? ');
              readln(answer)
       until answer in ['Y','y','N','n'];
       if (answer = 'Y') or answer = 'y')
       then
            write(printer,chr(15))            {set condensed}
       else
            sentence := '  ';
            while sentence <> sentinel do
                  begin
                        readln(sentence);
                        if sentence <> sentinel
                        then
                              writeln(printer,sentence)
                  end;
             writeln;
             writeln('End of Printing Program')
        end.
```

THANKS FOR THE PROGRAM. I agree that Pascal is a splendid programming environment. I could never get to grips with the way C will let you do anything you want, then falls over. I much prefer the structured Pascal approach. It may be pedantic at times, but certainly keeps you on the straight and narrow.

As for the on-line filth, it's illegal to transmit anything of a dodgy sexual nature over the telephone lines, but difficult to enforce. There are more than 400 privately run Bulletin boards in the UK, all unlicensed as bulletin boards do not need a licence.

A regulatory body would have to monitor every byte in every download area and keep abreast of the changes on every BBS. Add the commercial on-line services to the list and you'll see how difficult it is to police.The only way to be sure that offenders are brought to book is to report every instance to the police and to BT.

HELP Up in smoke

We live in a small Victorian flat with no room to store anything. The one thing that can be said in its favour is that we have an open fire. In order to save energy we decided to recycle all paper waste and bought one of these things that makes combustible bricks from paper pulp.

My wife and I are hoarders of magazines and had a room full of everything from *Which?* to the *Radio Times*. Also included was a complete set of *NCE* dating back to the free issue in *ACE*.

Three months of brick manufacture and burning has brought us to the following conclusion. Of all the magazines, pulped, bricked and burned, *New Computer Express* provided the most warmth, least ash and least smoke. So now you know for a fact that *NCE* is hot stuff!

Ronald Deighton, Lewes, Sussex

WE COULDN'T bear the thought of such a valuable collection going up in smoke and the entire editorial team is unconsolable.

While we are interested in the statistic, we beg to point out to anyone else planning to torch old copies of *Express* that the sale value of a complete collection of *Express* would buy several bags of coal/paper pulp and keep you warm for much longer.

Someone else would have the advantage of a complete reference set of *Express* too.

TIP! Amiga Scroll

This is a tip for the Amiga A500 that I discovered and I think it may also work on other Amigas. When you are in a Shell or CLI screen and type DIR or LIST, pressing the right mouse button will stop the text from scrolling until you release the button again.

This also works for other programs that scroll the text on the screen upwards, such as *Protext* when it types to the screen. This is far better that pressing the space bar, the return key or the back arrow key to get back to the list.

Now the question. I am about to take an Open University course with a company called Computeach to train as a system manager and will have to learn to program in COBOL. I am using the Amiga A500 expanded to 2Mb with a 20Mb hard drive, so could you tell me if a COBOL compiler exists for the Amiga, how much they are and where I could get one from? If not for the Amiga, would a PC version run on the PC Emulator for the Amiga? Also, what books can you recommend for a beginner in COBOL?

Malcolm Pratt, Tyne & Wear

WELL DONE for noticing that feature. This is caused by the right button's job as menu bar selector. When you push the right button, this selects the menu bar and suspends other activities such as scrolling.

Unless anyone knows better, I'm afraid there's not a COBOL compiler for the Amiga although you could try one of the PD houses that has all of the Fish Disks or other large US PD collections.

HELP Sounding out

I have recently attached my Atari 520STFM computer to an Amstrad CTM 644 monitor (I could not sell my Amstrad CPC 464). I know that the monitor has no sound output, so is it possible (in any way) to get sound out of the computer without too much soldering?

Aniket Patel,Bedfont

THE SIMPLE WAY (and it will only involve a tidgy bit of soldering) is to consult the manual that came with the STFM and connect the sound output pin and sound ground pin to a signal cable. This should be terminated with whatever plug is compatible with the input of your amplifier/hi-fi, etc. If you don't feel comfortable with the above instruction, get someone competent to do the job for you. Good luck.

Write to Keith Pomfret, Tech Tips, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

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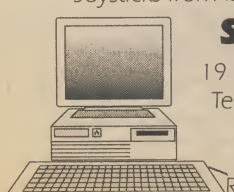

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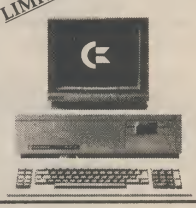

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TOOLS OUT FOR SUMMER

Whether you're writing a new program, editing or debugging an old one, Mary Branscombe shows you the latest tools for the job in hand.

If you use OS/2, there are two new utilities from the OS/2 Group (0285 655888) to help you with your programming. *API-Trace* keeps a trace of the OS/2 Application Programing Interface (API), to show how your programs are using OS/2 services. It can check a program's flow of execution and find any problems caused by the return of unexpected OS/2 error values. API-Trace can trace calls to the API entry, with the parameters used, as well as error returns from the API entry.

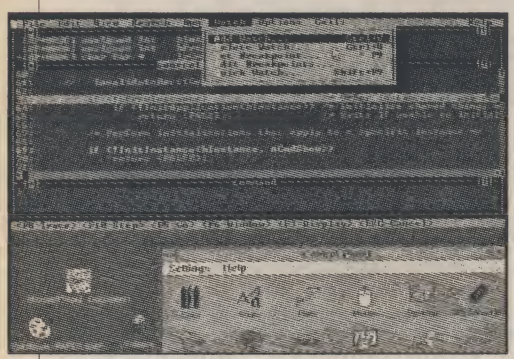
KNOW YOUR PROFILE

The Profile Editor can access the information stored on a program's Profile. You can replace the User Profile with a test Profile and change it back whenever you need to, as well as creating test data and backups. The editor displays all the application names found in the current Profile, with the associated key names; any linked data is displayed in hex or ASCII and can be edited as necessary. *The Profile Editor* costs £100.

SERIOUS NUMBER CRUNCHING

If you're writing a program to do some serious number crunching, then you really want to be using Fortran. It's not a new language by any means, although the Fortran 90 standard may give it a new lease of life, but what it does, it does well. There's a public domain version of Fortran 77 for the Amiga, BCF Fortran on one of the latest Fred Fish disks, FF470. BCF Fortran gives you a compiler, a linker and a run-time support library. A handy program called *Keymenu* on the same disk lets you use the cursor and return keys to select from menus.

Microsoft's CodeView debugger is an excellent tool for debugging programs in Microsoft languages and once you're used to using it for one language, it's the same for all of them. A major drawback is that CodeView is a text-based application and you need a second monitor to see what's going on. If you use the Microsoft Windows Software Development Kit, Nu-Mega's CV/1 version 2 lets you run the CodeView debugger in a small window, leaving most of the screen free to show the program running, rather than using a second monitor.



• CV/1 maps the Codeview debugger screen into a window on your primary display.

GOOD SOURCE FOR PC

Another useful PC programming tool, this time from Microsoft, is their Source Profiler. This generates information about programs written in most Microsoft languages, from C and Macro Assembler to Cobol, including Windows-based applications. The profiler identifies which lines and functions of a program are executed most frequently. It monitors the time taken to execute selected areas of code, the number of times code is executed, whether any code is not used and the time spent in different areas of the program.

Different output files of statistics can be combined to produce test reports. It uses compiler-generated input from the CodeView debugger to identify lines and functions. You can look at an entire program or at selected sections. The Profiler only uses 80K of memory and uses virtual memory to store its results.■

LOADSA CODE

Fred Fish disks are collections of Public Domain software for the Amiga – you only pay for the disk and the expenses of the company that copied it. Disks are available from most Amiga PD libraries. This collection is up to 470 disks and still going strong, including games, utilities, programming languages and tutorials. The latest disk, FF470, includes a full version of Fortran and there have been a lot of goodies on recent disks as well. For Amiga programmers, these are some of the disks to look out for.

DISK 421 – EZAsm: a language that combines parts of C with 6800 assembly language, so you can write easy-to-understand assembler code.

DISK 422 – TrackDOS: this utility makes it easy to transfer data between memory, AmigaDOS and devices like disks from within your programs.

DISK 441 – Deksid: for editing files in hexadecimal (base 16) notation.

DISK 443 –DICE: Dillon's Integrated C Environment has an editor, compiler and linker to use together, so that you spend less time swapping between tools and more time programming.

DISK 446 – PointerLib: if you want to put a different pointer on the screen in one of your programs, this disk-based library gives you some to choose from.

DISK 447 – TCL: Tool Command Language for the Amiga. This is a simple text-based language for passing commands to editors, debuggers, shells, and other interactive programs.

DISK 451 –SnoopDOS: lets you see what calls are being made to AmigaDOS by a program.

DISK 456/457 – CManual: a complete manual for programming in C on the Amiga. It shows you how to open and use screens, windows and menus in your programs.

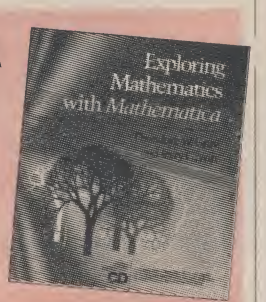
EXPLORING MATHEMATICS WITH MATHEMATICA

Exploring Mathematics with Mathematica •Theodore W. Gray and Jerry Glynn • ISBN 0-201-52818-5 • Addison-Wesley • £29.95

Mathematica is Wolfram Research's language for doing mathematics on a computer – it runs on the PC, Macintosh and NeXT machines (as well as other Unix-based workstations). *Exploring Mathematics* shows you some of the pictures and sounds that you can get from mathematical functions as well as demonstrating how to use Mathematica itself.

This is a most unusual (and inspiring) book. It is written as a dialogue between the two authors, butting in, interrupting each other, adding comments and remarks and asking each other questions. This can seem a little off-putting, but it makes a book on involved mathematical functions very easy to read – you're never sure if the authors are explaining things to you or to each other.

You also get a CD-ROM with the book. This contains an electronic copy of the book that you can read using the text viewer in Mathematica. All the examples and illustrations in the book are Mathematica functions, so you can run them to see what happens. The sounds on the disk can be played through a computer or on an audio CD player. There are some useful programs as well and you can get copies on floppy disk from the publisher separately.



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The book starts makes the maths attractive because you can see what the numbers actually do. The colour pictures are printouts of Mathematica functions and they are quite stunning.

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MERTON PD – Cheap Atari ST PD. Send £1 or blank disk for catalogue with SAE (cheques payable to T Huq) to: 10 Grasmere Avenue, London SW19 3DX.

ANGLO AMERICAN SHAREWARE – PC Shareware/PD £1 a disk. Over 2000MB top Anglo American titles. Send 2 F/class stamps for menu friven catalogue disk. 37 Devon Place, Newport, Gwent. Telephone 0633 259847.

LAPD – Worldwide reputation for quality PD for the ST. Thousands of programs available. Disk catalogue only £1.00. Credit cards accepted. Telephone 0773 605010 or 0773 761944.

ST PD COMPILATION DISKS – Send SAE for details or £2.50 per disk stating disk (numbers 1 to 5). Write to: A burns, 61 Coniston Road, Gunthorpe, Peterborough PE4 6UL.

IMG CLIP ART – GDOS fonts for sale or swap. For catalogue send blank disk plus stamped addressed envelope or £1 to E Renner, 62 Broxholme Lane, Doncaster.

C HACK'S PD LIBRARY – Captain Hack's PDL. ST Demos/Adult. Free disk catalogue; Blankie 60p plus SAE to 19 Latimer Drive, Laindon, Basildon, Essex. Tel: 0268 416 888.

PD ST – PD Disks from £1. Disk based catalogue 50p. Quote NCE for special discounts. Send to PDST, 95 Elton Road, Sandbach, Cheshire CW11 9NF.

STUPID FLOWER PUBLIC DOMAIN – New library for ST users. Send an SAE and blank disk to SFPD, 3 Read Mead, Glastonberry, Somerset, BA6 8DN.

THE SOURCE PD – For the Atari ST. Compacted demos disks. £1.50 each. Write to: The Source PD, 7 Shearwater Lane, Norton, Stockton, Cleveland TS20 1SH.

Let all the world know

Do you run a user group or bulletin board? Are you organising any event? Do you publish a fanzine? Let the world know about it through *Shopping Express*. Fill in this form and send it to us at: 30 Monmouth Street, Bath BA1 2BW.

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Address: .....

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- Write your ad in block capitals on the grid below using one word per box.
- Also, please let us know if any of the information on these pages is out of date.

FANZINES

ATARI LYNX FANZINE – For Sample copy please send\ a first class stamp to Andrew Reid, 63 Croftway, Selby, North Yorkshire YO8 9DD.

ATARI LYNX CONSOLE USER – The brand new magazine dedicated to the Atari Lynx. 30p plus SAE to Lynx User, 11 Montgomery Drive, Spencer's Wood, Reading, Berks.

MCB – The great new fanzine dedicated to owners of the truly wonderful PC. 10p plus SAE to: OFFSHOOT Publications, 8 St John Street, Coleford, Glos GL16 8AR

CONSOLE MAGAZINE – The magazine for game consoles. Send large SAE for free sample copy to 125 Arnold Road, Bestwood, Nottingham NG5 5HR.

AMIGA CHEAT DISK – Issue six on two disks for only £3.50. Write to JS Smith, 45 Maplecroft Crescent, Wincobank, Sheffield S9 1DN.

AMIGA DISK MAG –with a new style with over 100 pages of news, reviews, art, music, and PD on two disks. Send £3 to Paul Harthen, 43 Boyds Walk, Dukinfield, Cheshire, SK16 4AX

AMIGA LA FANZINE – Only £2 including membership. Write to L Stacey, 3 Norfolk Close, Bewbush, Crawley, West Sussex, RH11 8GJ

AMIGANAUTS Disk Fanzine – Two disks, issue one out now. Only £2.50. Loads of PD demos, reviews etc. SAE for info or cheques/POs to N Gilling, 1 France Furlong, Great Linford, Milton Keynes, Bucks, MK14 5EM.

AMOEBA QUATERLY – Amiga fanzine (with cover disk). Send SAE to 369 Wanstead Park Road, Ilford, Essex IG1 3TT for free details now.

ASTAC – a new Atari ST and console mag. For details send an SAE to Astac, 383A Drayton High Road, Hellesdon, Norwich, Norfolk.

ATARI ST DISK MAG – Stellar Issue 1 out now. Free PD software, reviews and more. Send double sided blank disk, SAE and £1 to Mark Nobes, Newholme, Aston Road, Chipping Campden, Glos GL55 6HR.

ATARI ST USERS – ELECTRON. 2 disks plus 40 page mag. Reviews, articles, games, advice, electronics, software library (PD 50p each) and Chess. £3.50 inc membership (refundable). Andrew Betts, The Mount, Wood Lane, Gallowstree Common, Reading, Berks, RG4 9BG

AXS QUARTERLY JOURNAL – The leading light's AXS Quarterly Journal. Amiga disk-based fanzine of PD, Comms, etc. £5 years subscription! Send for yours! 14, Meads Road, Guildford, Surrey.

C64 RESET POKES – Only booklet with over 300 pokes. Only £2. Old and new games. Write to C64 Pokes, 12 Dudley Road, Brighton, East Sussex, BN1 7GN.

C LANGUAGE – Bi-monthly newsletter, C source library and BBS. £14pa. Contact Francis Glassborow, 64 Southfield Road, Oxford

CHESS COMPUTER WORLD – Independent newsletter with results and ratings from the world of Computer chess. Subscription only. £3.50 a year for four issues. Write to Bryan Whitby, 16 Mansefield Road, Kingsley, Warrington, Cheshire, WA6 8BZ.

COMPUTER LYNX – Amiga disk magazine. Only £1.50 plus 50p p&p. Huge range of PD from £1 per disk. Write to 187 Perrysfield Road, Cheshunt, Herts, EN8 0TL.

CVu – The journal of the C Users Group (UK), Volume Three, Issue four (May) out now. Price £2 for 60 pages. Write to Francis Glassborow, 63 Southfield Road, Oxford 0X4 1PA.

THE DISK – Issue three for Amiga users. Including Rattlecopy, PPanim, Noclicks3.6, Ski game and lots more, Free draw – win 400 utilities. Send £1 to Steven Lord, 6 Stubbing Brink, Hebden Bridge, W Yorks.

GENERAL AMIGA – The monthly disk-based magazine. Covering all areas of Amiga computing. Compiled by enthusiasts for enthusiasts. Only £1.50 per issue. Send to: General Amiga, 19 Earn Court, Alloa, Clacks, FK40 1PT.

LYNX USER – Atari Lynx console user, the brand new magazine dedicated to the Atari Lynx. 35p and large SAE to Lynx User, 11 Montgomery Drive, Spencer's Wood, Reading, Berkshire.

MAGNETIC MEDIA HANDLE WITH CARE – Amiga disk fanzine with news, reviews, music, games, utilities, userhelp. At least two disks per month. Each issue £2.80. Write to Magnetic Media HWC, 25 Rigbourne Hill, Beccles, Suffolk NR34 9JC.

PDNR – PD companies and other PD enthusiasts, send SAE to me for information on a special fanzine. James Thoroughgood, 114 Sandringham Way, Frimley, Surrey GU16 5YF

PROJECT 'X' – Fanzine, club and shareware library for PC owners. Send stamp for details: 48 King William Dr, Cheltenham, Glos GL53 7RP. Prestel 01-111 5474.

SCANNER – Amiga disk magazine. Packed with games/demos/utils/ reviews/competitions plus much more. Send SAE for details to Telescan, Handsworth Road, Blackpool FY1 2RF.

SPANDEFANG SOFTWARE – 68000 and coders magazine. For free first issue send SAE and blank Atari ST disk to 4 Cambridge Terrace, Harrogate, N Yorks HG1 1PA.

ST GAMES NEWSLETTER – Games, reviews, previews etc for Atari ST. Send SAE for Newsletter to Ben Dobson, 1 Ryedale Way, Selby YO8 9BP.

STEN – the ST enthusiasts newsletter issue three now ready. Send a disk and SAE for your copy now. Postal Trivia League starting. Interested? Write to 14 School Road, Morningside, Newmains.

STYLE – Free Atari PD newsletter. Published monthly by Jennix PD. Send a SAE to STyle, Jennix PD, 66 Abbey Road, Strood, Kent.

STOS magazine, out every month.Send an SAE for full details to 11 Shore Crescent, Bishops, Waltham, Hants SO3 1DZ

SYRACUSE ARCHIMEDES DISK MAGAZINE – out now only £4.99. Includes the magazine disk plus two disks of public domain software. Send to Aste Wythenee House, 10 Alastair Crescent, Prenton, Wirral, L43 0UR.

THUNDERNEWS – CBM 64 user magazine on disk/tape. Send sae for details and competition to 159 Hough Road, Wallsall, West Midlands WS2 9BG.

SPOTLIGHT ON HOTROD RACING

Hotrod Racing is a computer modulated play by mail (PBM) game based on stock car racing. Up to 10 players can take part in each individual game – and any number of games can run concurrently.

The program at the heart of the game, which runs on an Atari 1040STE, has taken game organiser Andrew Hudson nearly four years to perfect.

To play the game you have to make a series of 25 command decisions for each turn of the game, relating to the speed you want to go, which way to turn, parts you require etc.

You mark down your decisions on a form which you send back to Andrew who feeds the information into the computer. It then compares your choices with those of the other competitors and works out who has come out on top in that round, and who has crashed.

Each turn lasts about two weeks and Andrew reckons that his beta testers – ie his friends – who have been playing for nearly a year now are still clamouring for more postal racing action

Andrew plans to produce a fanzine to accomapny each turn and award cash prizes to the winners of each round. Prices are £5 to 'start-up' (some of which goes towards the prizes) and 50p for each turn. The 'start-up' package includes a 15 page rulebook, two free credits and various parts lists.

For further information write to: Andrew Hudson, 6 Albermarle Road, St Ives, Cambs PE17 6UN.

SHOPPING EXPRESS BUYERS' GUIDE

While *Shopping Express* is undoubtedly the perfect way to track down the best bargains in the computer world, many people are still wary of buying products via mail order or through personal ads. This is probably because usually you are not able to have a look at what you are purchasing before you hand over your money.

We do everything in our power at this end to make sure that all the advertisements we run are above board. But here are a few tips designed to help take the risk out of buying via mail order or over the telephone.

- Be precise in describing what you want to buy. Leave no room for error. Feel free to go overboard in double checking details – make, model, specifications, colour, size, the page number and name of the magazine in which you saw the advertisement etc.
- Confirm the exact price of the article you are buying. If you are phoning a company check if there are any hidden extras, such as postage and packaging.
- Check how the item will be delivered to you and how long it should take. This is especially important with reader ads where delivery details are rarely mentioned.
- If you are writing off for the product keep copies of all letters. If you are phoning, note down details of when you phoned and who you spoke to.
- If possible enquire about guarantees and servicing. Check the supplier's policy on returns and refunds. With reader ads, it is best to make the effort to see the item personally before you hand over money.
- When possible pay by credit card for items over £100, as this provides extra cover under the credit card companies' own insurance schemes. Otherwise use a crossed cheque or postal order. Avoid sending cash at all costs.

SECOND-HAND PRICE GUIDE

- The following chart is compiled from the reader ads we havw received here at Shopping Express over the past month. The items listed are those which have been advertised in significant quantities.
- Lower priced products within a range are usully in need of some repair.
- Higher priced items are invariably being sold along with numerous add-ons and mountains of software. This is why figures quoted under 'range' can often be higher than the price of the machine new.
- Remember, this is only a rough guide, so if you find an Amiga down the local market for £20, bully for you.

Product	Range	Av	Trend
Spectrum	£40-90	£70	▼
❊ Spectrum 128	£120-220	£170	▼
Spectrum Plus 2	£90-200	£140	▲
Spectrum Plus 3	£100-180	£150	◆
❊ C64	£80-240	£160	▼
❊ CPC464	£80-380	£190	▲
CPC6128	£140-500	£280	▼
PCW8256	£220-300	£260	▲
PCW8512	£250-350	£300	▼
Amstrad PC1512	£300-550	£400	◆
286 PCs	£250-£950	£700	▼
386 PCs	£700-£2,000	£1,000	◆
❊ 520STFM	£150-475	£280	▼
1040STFM	£300-700	£440	◆
520STE	£250-450	£310	◆
Lynx	£50-175	£115	▲
Portfolio	£100-120	£110	▼
Amiga 500	£199-575	£300	▼
❊ Amiga 500 (1Mb)	£300-800	£450	◆
Amiga 2000	£400-1,000	£800	▲▲
PC Engine	£90-250	£180	▼
Sega Master	£60-220	£130	▼
❊ Sega Megadrive	£80-350	£200	▲
Gameboy	£90-150	£100	▲
Super Famicom	£250-350	£300	◆
BBC B	£270-390	£330	▼
Acorn A3000	£470-700	£550	NEW
LC10 printer	£90-190	£110	▲
24-pin printers	£90-£250	£150	NEW

❊ – Advertised most frequently
▲ – More expensive than last month
▲▲ – Over £50 more than last month
▼ – Less expensive than last month
▼▼ – Over £50 less than last month
◆ – No movement
NEW – Now selling in significant volume

- Very little movement this month. Indeed, the volume of sales of hardware seems to have fallen (with the exception of Atari 520 STFMs which everybody seems to want to get rid of for some reason). The amount of second software being sold, especially games, however has risen dramatically.

The EVENT HORIZON

Who's doing what, with what, with whom, how, why and where...

THE PLACES TO BE . . .

Making the Difference
Now - Tue 31 Dec
At the Science Museum, London. Info: 071-938 8080.

PC World Forum Tue 9 - Sun 14 July
In Moscow. Info from Terence Coe on 010 1 508 820 8122.

International Music Show
Wed 10 - Sun 14 July
At the Olympia, London. Info: 071-730 7852.

The International 16-Bit Computer Show Fri 12 – Sun 14 July
At the Novotel Hotel, Hammersmith, London. Advance tickets cost £3 on 0726 68020. Admission on the door is £5.

GeoCon '91 Sun 11 - Tue 13 August
At Cambridge, MA, USA. Info: 010 32 03 234 3180.

Computer Animation Competition and Exhibition Wed 21 - Wed 28 August
At the Amiga Centre Scotland. Entries in by 31 July. Info: 031 557 4242.

Leeds Computer Extravaganza
Fri 13 - Sun 15 Sept
At the New Exhibition Centre at Leeds University. Info: 0532 677 657.

Business Computing '91
Tue 17 - Fri 20 Sept
At the Earls Court Exhibition Centre, London. Info: 071-486 1951.

The Works of Charles Babbage
Thu 19 Sept
Lecture by Dr. Martin Campbell-Kelly (from the University of Warwick) at the King Edward VI College, Totnes at 14.15. Info: 0803 863821.

Computers Count Tue 8 - Thu 10 Oct
An exhibition looking at the use of computers in our everyday lives, containing 'hands on' state-of-the-art exhibits. At Totnes Civic Hall. Info: 0803 863821.

Business Communications Awards
Thu 10 October
At the Savoy Hotel, London. Entries in by 15 July. Info: 0800 800 847.

Charles Babbage's Impact on Modern Computing Wed 23 Oct
Lecture by Doron Swade, Senior Curator, at the Science Museum, London at 17.30. Info: 071-9388196.

Image Processing '91
Tue 29 - Thu 31 Oct
At the Birmingham NEC. Info: 081-868 9933.

System Builder Wed 30 – Thu 31 Oct
At Sandown Exhibition Centre, Esher, Surrey. Info: 0822 614671.

Computer Graphics '91
Tue 5 - Thu 7 Nov
At the Alexandra Place in London. Info: 081-868 9933.

Desktop Cad '91 Tue 5 - Thu 7 Nov
As above.

All Micro Show and Radio Rally
Sat 9 Nov
At Bingley Hall, Stafford. Info: 0473 272002.

Computers in the City
Tue 12 - Thu 14 Nov
At the Barbican Centre in London. Info: 081-868 4466. ■

The Insider...

In the fast lane of hi-tech, industry magnates sometimes find their mouths motoring before the brain is in gear. The Insider is here to keep an open ear...

Yet another seven days have passed away into the great tape-streamed back-up in the sky. During this time, the inhabitants of planet computer continued to make idiots of themselves. Read on for details, but remember – if you have any gossip which you think we should use, why not send it in and win a fiver?

LOW TECH ALERT

Can you guess which major UK PC-based magazine has no archived copies of itself? That's right. Going back to issue 1... well you can't anymore. By the way, and to avoid needless violence, the mag in question does not come from the same stable as *Express*.

PHONE FREALKING OUT

Often our fearless *Express* scribes will have to cross Hell and high water to track down certain elusive industry types.

Unfortunately, this seems to be a pre-requisite of getting even simple information from BT. And I quote...
Fearless scribe: "Directory enquiries? Could you give me the number for BT's Dial Plus service?"
Directory enquiries: "Er ... (long pause and tapping at computer) ... what is it exactly?"
Fearless scribe describes Dial Plus, a service by which computer users can make international calls at the cost of local calls.
DE: "Oh, ask the operator. She'll probably have it."
FS: "Hello, Operator? Could you give me the number for BT's Dial Plus service?"
Operator: "Um, would you hold please? (Long pause.) Could you tell me what it is exactly?"
Fearless scribe describes ... blah blah.
Op: "Oh. Please hold. (Long pause.) I'm sorry, could you try customer relations? Here's the number."
FS: "Customer relations? Can I speak to someone about Dial Plus?"
Customer relations: "Ah, our PR company is briefed on this. Here's the number."
FS: "PR company? Dial Plus?"
PR Co: "Oh, you'll want to speak to customer relations.
FS: "I just did."
PR Co: "Ah. Well here's the name of the chap you want."
FS: "Customer relations? Could I speak to Mr Name please?"
Mr Name's secretary: "Sorry, he's out."
FS: "Hello, Samaritans?...

A JOKE

Question: How do you get a free laptop from the Royal Airforce?
Answer: It's easy - just boot up a Sierra!

Golden Moments

Express looks back in time . If it happened in the world of computers, we reported it first.

ONE YEAR AGO

● Apple's commitment to research and development was underlined when it was revealed that the company was conducting an experiment to teach a gorilla to use a Mac. The gorilla in question was Koko, already made famous by her interest in sign language and picture books. Alan Kay of Apple turned the picture books into a HyperCard stack with the hope of observing Koko's understanding of the system and thereby improving future user interfaces. This in no way reflects Apple's opinion of its users' intelligence.

● Commodore slashed the prices of its entry-level PC range. The price of the bottom of the range model was reduced by nearly 20 per cent, after being on the market for a whole four months.

Despite the range's lack of success, the move was claimed to be part of a three-pronged marketing strategy. Try as Commodore might to disown its appreciable success in the leisure field, it has never managed to recoup the business sector success of the ancient PET.

TWO YEARS AGO

● A CD-ROM reader was introduced for the Commodore 64. It came as an interface joining an ordinary CD player via the headphone socket to the back of the C64. Packaged with it was a CD containing 10 hit titles. At £29.95, the system was something of a bargain, but then again, it lacked an infra-red remote control unit..

● Intel launched a processor based on neural network technology, said to be 100 times faster than conventional chips. Rather than finding its way into a sexy new computer, it went to the US Navy to help them shoot things.

● Dirty mac wearing comms enthusiasts were disappointed to find a lack of porn on their favourite BBS as a result of national media exposure.

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When you lift a magazine or newspaper, do you spot the spelling mistakes straight away? If so, you may be the kind of person we are looking for to join us at FUTURE PUBLISHING as a Production Editor.

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THE PD COLUMN

Frank O'Connor kicks in with another chillin' and thrillin' PD extravanga to tell you where it's at, where to get it and how much you'll enjoy it when it arrives.

ORANGES AND LEMMINGS

It never rains, but it pours. Just when you think that real quality PD has just about died, along comes something to change your mind. Eric Schwartz, famous (ish) Amiga animator has come up with the goods once again. The good news is, that this is his best animation yet. The bad news is that unless you have an Amiga 2000, or your A500 looks like the business end of Jodrell Bank, you won't be able to see it.

It runs on a mind-numbingly large two Megs and when you load it up, you'll see exactly why. It's called the ***Anti Lemmin' Demo*** and features an hilarious cartoon. The demo is a gentle poke at Psygnosis' ***Lemmings*** game. The animation starts with the control panel from ***Lemmings***. A woman's hand hovers over the panel and presses a button.

Lemmings fall from the sky, landing not very gently on a grassy hillock. Unfortunately for the hapless Lemmings, the F16 from Schwartz's previous 'toons spots them. A fiendish grin crosses the aircraft's face (yup, it does have a face) and it opens fire on the poor little things.

As they scarper, the female responsible for putting the lemmings there, tries to stop them using the Blocker icon on the control panel. A blocker stops and tries to hold back the lemmings. They're having none of it and trample him into the dirt. Sadly, they do next what lemmings are famous for and plummet to their doom over a cliff edge.

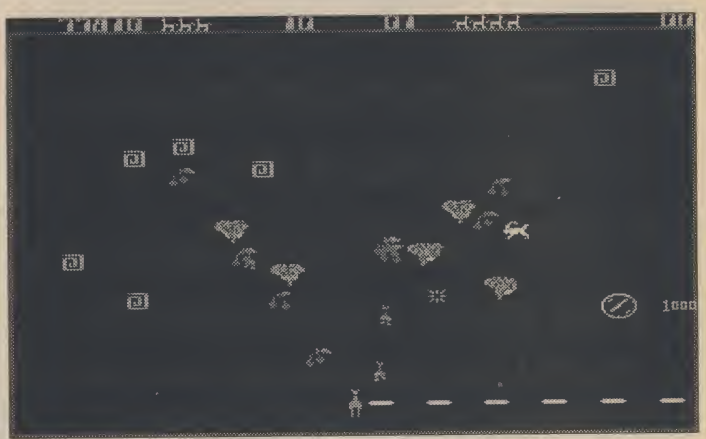
The girlie on the control panel is quick enough to save one with the umbrella parachute command and he floats gently to earth. Using the Climber option, said girlie makes him scale the cliff edge. At the top he pulls a rocket launcher from his pocket and opens fire on the incoming F16. A fairly pokey explosion rocks the aircraft, but doesn't quite finish him off.

What happens next has to be seen to be believed. Suffice to say that if you have a two Meg machine, you'd better send off for this right away. Eric Schwartz is in no uncertain terms, a bit of a super genius. Easily the best animator on the Amiga, he combines a superb grasp of artistic principles, with a superb and incisive sense of humour.

The characters in the piece have so much life and appeal, it's hard not to feel sorry for the poor little blighters and even harder not to chuckle when they snuff it. Watch out for this guy, he's going to be big and not just on the Amiga. Shame it can only run on two Megs, but thanks to NBS in Newport for popping that one along.

LLAMARAMA ON THE AMIGA

Jeff Minter, that software guru and all round hairy person has made the news in this column once before. Last time, mention of the great furry one was in reference to his ST masterpiece



• All time ST classic and PD masterpiece, Llamatron, is now on the Amiga.

EdLib

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SPECIAL STARTER PACK: The above 5 disks for only £5.00
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C Disks: Learn C without tears - a very thoughtfully designed presentation.(2 disks)
Best Mandelbrot: Extraordinary Mandelbrot programs all in one package.
Fractal Laboratory 1: A comprehensive suite of programs for exploring just about every aspect of fractals. **(Fractal Laboratory 2 now also out!)**
Scientific Collection 1: PD Astronomy - for starry-eyed stargazers.
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NEW-WAVE £1.99 G.I.R.L.S.

Llamatron. Jeff's obsession with all things goat-like and dromedary, has led to some of the strangest games ever.

Specific examples include ***Revenge of the Mutant Camels*** and ***Colourspace***. A bit of a hippy is Jeff, but also a darned fine programmer. ST ***Llamatron*** was an all time classic and one of the best PD games in history. Amiga owners had every right to be jealous, but fear not. His Furryness has released the game on the Amiga at last.

The question on everybody's lips is "But is it better than the ST version?". Simple answer is yes, but only marginally. The samples are a little cleaner and sharper, but in every other respect the game is identical. Basically, the game is a tarted-up version of the Williams arcade classic ***Robotron 2084***.

The action takes place on one screen of complete mayhem. You control a laser wielding Llama and have to rescue your camel buddies. This would be very simple were it not for the hordes of death dealing nasties on the screen.

The nasties are very bizarre, including coke cans, packets of fags and blue Rizla's (better not think about that too much). Mandelbrot sets are very tricky customers and scream horrifically when they're shot. The action is simple and the pace frenetic. In short, it's the perfect shoot-'em-up. Extra weapons, special bonuses, warps to advanced levels and some of the wackiest sprites ever, all add up to a truly zarjaz experience.

• Iron Maiden – a great demo, but hip-hop funsters might not appreciate how their heroes are portrayed.

The fact that as shareware, it will only (if you're honest) cost you a fiver is incredible. Even more amazing is that Jeff will send you a poster and a free game when he receives your donation.

Jeff has promised more stuff will be forthcoming if people are nice enough to send the fiver, so it's worth doing. Remember to check out the double joystick option, just like the original arcade machine. Lush.

ST LOVE TRACKS

Happenin' acid hip-hop funsters won't like the Iron Maiden demo one little bit. Long haired, greasy, leather jacket wearing metal heads on the other hand, will. The demo is really well done. We've all seen the usual soundtracker and sampled music demos, often accompanied by graphics of some sort.

This demo plays the old Iron Maiden classic *Phantom of the Opera* (also known as the Lucozade song) whilst being accompanied by digitised animated footage of the band themselves.

The digitised images are looped and arranged in such a way that even when they are repeated, it still looks like concert footage. The tune is a pleasant and delightful rendition of early thrash/speed metal and if clanging, grunging guitars are your thing, then this is the disc for you. It's available from Floppyshop way up in Aberdeen.

SAMPLING WARES

Also from Floppyshop is a rather spammy sample convertor. This nifty little program takes sampled sounds from almost every ST soundtracking device and converts them into a single format. This could bring an end to disk swapping when using samples. It's quite ingenious, figuring out what kind of sample you are loading. A simple menu system allows you to convert it to the new format, a process which takes quite some time. This might sound already, completely invaluable to ST musicians, but the best news is yet to come.

Sample Convertor allows you to convert Amiga samples. This is a real coup, let down only by the fact that the Atari won't read Amiga disks. Not that much of a problem. You can save the Amiga samples on to IBM PC disks, which the ST will happily read.

This opens up a huge library of Amiga samples to ST owners and if MIDI music is your scene, then you can't afford to be without this. It's very easy to use and is very well presented. A real little gem. ■

ADDRESSES, COS YOU KNOW YOU WANT EM'

Floppyshop in Aberdeen have quite a range of ST PD on their shelves and currently live at:
Floppyshop, 45 Provost Graham Avenue, Hazelhead, Aberdeen AB1 8BH.
Tel: 0224 312756

NBS will be more than happy to cater for your Amiga needs, just drop a line to: 132 Gunville Road, Newport I-W, PO30 5LH

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Nucleus: A budget shoot-em-up that will keep you occupied for hours.....£3.00
1036: Amibase Professional II (v.1.2). The new additions to this database make it a must have. It includes a nice picture addition facility. (1Mb).....£3.50
876: Quizmaster, think you know it all? Well now you can prove it. With save and re-load facility. For 1 to 4 players. Great fun, excellent value.....£3.00
877: 1 Across 2 Down. A fully fledged crossword program. (Data disk No: 1 is supplied free!). For only £5.00. Data disks 2, 3 and 4 are now ready at £2.00 each.
1038: Super Amidash. Do you remember that good old Commodore 64 game Boulderdash? Well here is your chance to have that fun again. Coded by Ian Cogings. 1Mb.....£3.00
1068: MOD Processor v1.91. make picture and/or music progs, adjust pic height/width. This version will load the new 8 channel octamed music and is excellent!.....£3.50
1075: Intuimenu. The easiest way to run all your programs. By Nicholas Lewis.....£3.00
1077: Clear. A very good, (but mind-bogglingly hard), game from PH Software.....£3.00
1083: Copper Writer/Screen Designer. By Frank Tout. (For programmers only).....£3.00
1088: Weird in Edgways. This is a good puzzle game. By Chris Banks 1Mb.....£3.00
1100: School Timetable Creator. (Print your timetable). By Keith Grant. 1Mb.....£3.00
1102: The Sprite Designer. A good way to draw/save sprites. By Frank Tout.....£3.00

Listed below is a small selection from the thousands of public domain progs that we have collated over the past 5 years.

Med/OctaMED samples pack. Six disks that are packed with samples for use with this excellent music utility. (Please note that one sample is very rude).....£8.00
971: Master Virus Killer. (Recognises over 120). Plus hard drive protect.....£2.50
990: Amiga C Club Manual v2 is now here. Loads more information, source and help from Anders Bjerin. This is now auto-booting and comes on four disks.....£6.00
996: The latest and easiest setkeys prog to re-define your keymaps. Plus a host of other utilities, including icon design, iconlab, clipit, etc.....Great value at £2.00
1047: Textplus v3. Oen is here! The many new facilities on this latest version are unbelievable and would take over half a page to describe! Treat yourself!....£3.00
1080: Vivaldi. "The Four Seasons". Two disk classical music set by Rob Baxter.....£4.00
576: Education for the Children. Includes blackboard maths and many others.....£2.00
1084: The Art of Med! 10 med toons that run for hours, (includes 8 channel).....£1.50
640: 8 games, including the train set game and the arcade game XFire. Good!.....£2.00
1087: Images from Aquarius v2. A well presented picture and music disk.....£1.50
700: D-Copy v1. An excellent disk copier that comes with full instructions.....£2.00
1090: Master of the Town. A 1 or 2 player smash 'em up game, with many levels.....£2.00
741: NorthC v1.3 (2 disks), a must for all you C coders. By Steve Hawtin.....£4.00
1091: An excellent Iettrix game from the Paradox team. Worth every penny.....£2.00
907: Snakes & Ladders. The famous family game. Choose 1 to 4 players. 1Mb.....£2.00
933: A-Gene Genealogy. This is the very latest (and best), v3.125 1Mb.....£2.50
1093: Golf Recorder. Play Golf? Keep your scores/results/data of your games.....£2.00
1032: Ami-FX 3. Third in this well known fractal series. (3 disk set) 1Mb.....£4.00
1097: Two of the best long running demos we've seen! (also the potato anim.).£1.50
1037: Two games. Klondike, (this is a great version), + Simon, (fun for kids)....£2.00
1098: The Crossword Creator. Make up your own Xwords and then print them out.....£2.00
1040: Balloonacy. This is an excellent game for children (or adults!). 1Mb.....£2.00
1099: Amigaholics. A new disk magazine (issue 1). Introductory price of only...£1.00
1052: Drifters Demo. "The Prisoner" and "Six of one" are extremely good.....£1.50
1101: Darkstaff. A Spectrum emulated text adventure game. (Not bad).....£1.50
1103: A very special 4 disk animation from the famous Tobias Richter. 5Mb!....£6.00
1104: Scum Haters. Get those baddies! A good fun game by Brazzle Atkins....£2.00
1105: Reincarnation of Sgt. Pepper. A two disk music/pic extravaganza. 1Mb .£3.00

LEGAL NOTICE
Postal PD have advertised our copyrighted programs, (OctaMED - Quizmaster etc), and PD Soft are advertising AmiBase Professional. These programs are not legally available from them, or any other outlets.

Into coding? - Want to learn? The Amiga Coders Club is for you! ACC 1-4 is the first four compressed issues of an excellent series for coders, even if you are new to the Amiga. If you want to learn Assembly, using DevPac, (or our own new ACC special assembler disk), this is the club for you! ACC 1-4 (compressed) £1.50. The Amiga Coders Club disks are packed with source, hints, tips, advice from many of the well know coders that are on the Amiga scene today. Issue numbers 5-13 are now available. Please note, (excluding the compressed introductory disk (ACC 1-4), and no. 12) the price for each issue of the ACC disks is only £3.00. ACC 12 is our birthday issue, it is a 2 disk set, and therefore the price is £6.00. Amiga Coders Club Special! At last a low priced assembler package for all you coders out there in Amigaland. Main coding by Mark Meany & Steve Marshall £5.00

LOOK

THE EXCELLENT (1Mb) EIGHT OR FOUR CHANNEL MIDI COMPATIBLE OctaMED v1

AMIGANUTS hold the worldwide copyright to this program and it will not be available through any other source.
The program is of such high quality that we could easily have put it on sale for £50 or more! However, Amiganuts and the author, Teijo Kinnunen, want it to be within the reach of all Amiga enthusiasts, so we are keeping the price down. You can purchase this great program for only £10.00 within Europe, (£15.00 for non-European). The price includes return post and packing. Payment in pounds sterling only, if ordering from overseas, send a bankers order/ eurocheque etc. (Credit card orders will not be accepted). A full instruction manual for this program will become available later, but due to the high costs involved, it will be quite expensive!

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The third 1991 update to our main catalogue is now ready for £1.00.
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Games Week

Classsic re-releases, sequels, hot new games, step by step reviews and tips to get you out of a tight spot – Stuart Campbell brings you the lot.

DIZZY HEIGHTS

Code Masters' inexpensive egg-related classic ***Treasure Island Dizzy*** very recently celebrated breaking through the 100,000 sales barrier, and that is on Spectrum format alone.

The game has been in the Gallup All Formats Top 40 since its release in early 1989, and has now been hanging on in there for an incredible 123 weeks! Evidence enough that the Spectrum hasn't rolled over and died yet.

• Dizzy on the ST - another 100,000 sales to come?

NO RESPECT

...but then again, the thousands of Speccy owners out there won't be quite so buoyant when they hear that US Gold has just dropped plans to bring the movie licence of *Godfather III* out for their machine after all, offering the excuse that the game's going to be 'just too big'. Still , the Spectrum's loss is the Sega Mega Drive's gain, as USG now intend releasing the game on that format as well as the other computer formats. Speccy movie buffs will have to be consoled (arf!) by the fact that at least USG is going ahead with plans for the Sinclair version of ***Indiana Jones And The Fate Of Atlantis***, the fourth Indy epic (although it's not actually a film, being based instead on the comic book of the same name).

BETWEEN PLANETEERS

• Super heroeCaptain Planet comes back to life, thanks to five right-on planteers

One of the most nauseating Saturday morning cartoons to have appeared to date has to be the new American import ***Captain Planet***. An environmentally-sound adventure series, it features a superhero who is brought into life by the combined talents of five 'Planeteers', a racially-balanced (one of them comes from each of the five continents, more or less) mix of cutely perfect teenagers (makes you ill already, doesn't it?), who are each endowed with one of the powers of the four elements (earth, wind, fire and water) or the rather ambiguous 'heart'. Sounds like a cue for a computer game, wouldn't you say? And strangely enough, that's just what Mindscape thinks too, and it plans to bring a platforms-and-ladders arcade adventure on that very theme to the gasping-in-anticipation games playing public sometime this October.

We've seen an early preview of the Amiga version, and, well, let's just say that at least programmer Tony Crowther's got a lot of time to work on it yet...

HERE IT COMES AGAIN

...Can't you hear the sound of it?

Yes, the biggest growth sector of our glorious industry these days has to be the re-releasing of old 'classics' at budget prices by most of the major software houses. Of course, some of these games really are classics, but some are no more than a vain attempt to squeeze a last few drops of cash out of software that's well past its sell-by date. From now on, I'll be keeping you up-to-date with what's happening and warning you what's a bum deal even at 17 quid less than what they tried to sell it to you for in the first place.

THIS WEEK

Kick Off And ***Extra Time*** (Top Shots, £7.99 for Amiga and ST)

One of the most popular and successful sports sims ever on its first release, Kick Off became an enduring classic within days of being unleashed on to the unsuspecting public. This re-release brings it together with Extra Time, a later data disk including some extra options and improvements to the original game. It is a staggering bargain on the Amiga. If you're an ST owner, though, prepare to be disappointed at one of the lamest attempts at a conversion job ever, along with some of the most pitiful graphics

TOP 10 SIXTEEN-BIT GAMES

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	1	*F15 Strike Eagle 2*	Mircoprose	ST AG PC
2	3	*Sonic the Hedgehog*	Sega	OT
3	4	*PGA Golf Tour*	Electronic Arts	AG PC OT
4	5	*Lemmings*	Psygnosis	ST AG PC
5	7	*Monkey Island*	US Gold	ST AG PC
6	2	*Eye of the Beholder*	US Gold	AG PC
7	8	*Armour-Geddon*	Psygnosis	AG PC
8	9	*Kick Off: Winning Tactics*	Anco	ST AG
9	6	*Hero Quest*	Gremlim Graphics	ST AG
10	14	*Life and Death*	Mindscape	ST AG PC

ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible OT = Other
Chart compiled by Gallup. © European Leisure Software Publishers Assoc.

PLAYING TIPS

LOGICAL Rainbow Arts • Amiga

This marble-shunting puzzler has provoked mixed reactions from reviewers and players alike, but if you want to have a pop at some of the later screens, then what you need is this guide to every single level password. First, here's the codes for levels 1 to 50, which should keep you occupied until next week when we'll print the other 50.

1 - WELCOME
2 - THE OTHER SIDE
3 - QUADRI QUADRA
4 - STONE ROAD
5 - NICE COLORS
6 - MORE COLORS
7 - REAL FUN
8 - PINK AND PINK
9 - GREEN PATH
10 - BAD DIRECTION
11 - DONT PANIC
12 - COLORMANIA
13 - REFRESHMENT
14 - FULL MOON
15 - RUNNING BALLS
16 - GREEN RIVER
17 - TWO ISLANDS
18 - MORE ISLANDS
19 - TIMES CHANGE
20 - OTHER THINGS
21 - BE HONEST
22 - BLUE N VIOLENT
23 - THREE PATHS
24 - DANGEROUS
25 - THE WANDERER
26 - SECRET CHAMBER
27 - FALCONS FLIGHT
28 - BLUE ANGEL
29 - FAR THUNDER
30 - A SIMPLE ONE

PLAYING TIPS

R-TYPE II Activision • Amiga, ST •

Many games in their time have been called 'the perfect arcade conversion', most recently Ocean's brilliant *Pang and Toki*. The latest contender for the award, though, could just possibly claim to beat them both. Activision's much-delayed port of the sequel to Irem's incredibly popular coin-op *R-Type* has just been finished by programming team Arc Developments, and to cut a long story short, it's stunning.

E
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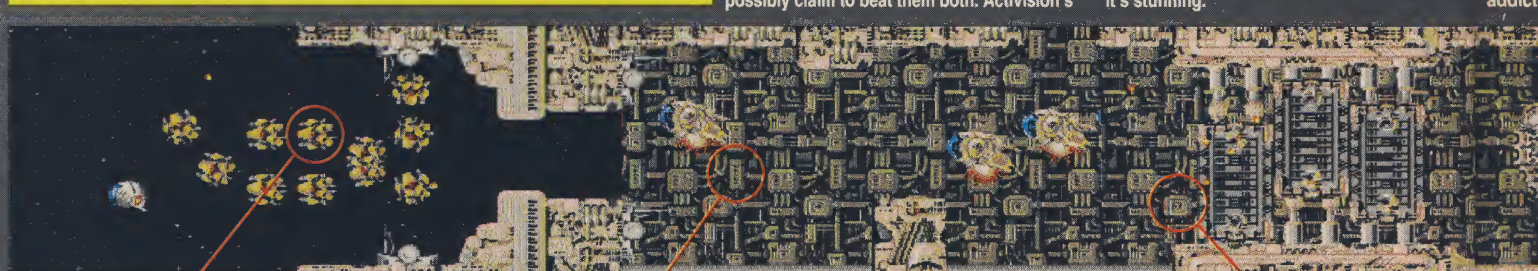
addict



1 - Here we see the official Bydo Empire Welcoming Committee spewing out in their millions to meet you, from the generators at the top and bottom.

2 - These aliens hang motionless in the sky just long enough to lull you into a false sense of security, then they blast you. Blow them away quickly.

3 - This is a nasty section, as the three tunnels sections move independently of each other. You have to shoot the gun turrets inside them too.

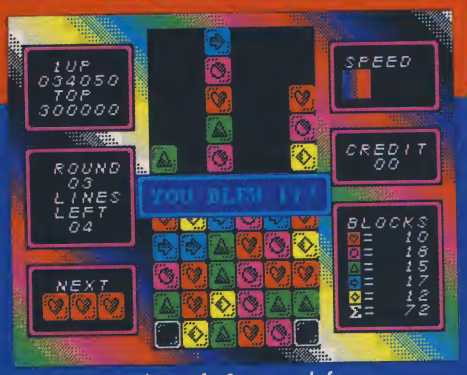
*4 - A b
know
snakes*

STACK UP

Zepplin • Spectrum • £3.99

Puzzle games, puzzle games, puzzle games. Don't you just love 'em? With *Tetris, Klax, Puzznic, Plotting* and all the rest, the Speccy must have seen just about every coloured-block brain twister the arcades have to offer. Or has it? The one thing that hasn't appeared yet is Columns, Sega's *Tetris* lookalike with *Klax* overtones, where you change the order of the colours in falling lines of blocks in an attempt to form lines of three or more of the same colour, which then disappear and make room for more blocks. (Look, it's simple when you play it, OK?).

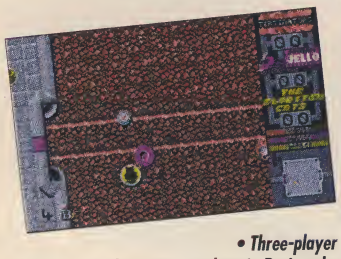
Zeppelin has sought to put matters right with the release of this budget effort which bears a number of striking resemblances to the Sega game, except that in this case it's not so much 'Columns' as 'Rows', since the blocks fall in horizontal lines rather than vertical. And a very nice job Zepplin's made of it too, with a slickly-presented and addictive game offering easily-grasped gameplay and a rapidly escalating level of challenge (but with variable skill levels and a practice option to help you get the hang of it). If you didn't like *Tetris* don't even think about it, but if you did, then this is probably the nearest thing to a proper sequel there's been so far. At £3.99, what have you got to lose? (Apart from, er, £3.99).



• *Columns goes sideways for Speccy puzzle fans.*

you've ever seen.

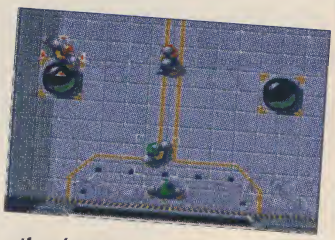
Projectyle (Electronic Arts, £9.99 for Amiga and ST)
Another brilliant sports sim, this time set well into the future, to a time when the most popular game is frantic and bizarre and sees three teams on a five-quartered pitch with the simplest rules imaginable – get the ball into your opponents' goals, anyway you like. A fast and furious cross between five-a-side football and air hockey, ***Projectyle*** features lovely graphics and some of the most entertaining gameplay you're likely to find.



• *Three-player amphetamine mayhem in Projectyle.*

Speedball (Mirror Image, £10.99 for Amiga and ST).

Completing this trilogy of ball games, ***Speedball*** isn't unlike a futuristic basketball with a lot of added violence. In ***Speedball*** it's more often than not a case of 'never mind the ball, get on with the game'. One of the best two-player head-to-head challenges around, the small pitch and fast action ensures that there's never a dull moment, although it has to be said that when put beside its sequel ***Speedball 2***, ***Speedball*** does tend to look a little simplistic. It doesn't have as much lasting appeal as a solo game either, but if you've got some friends and you like beating them, this is a pretty essential purchase. ■



• *If you've ever wanted to play six-a-side soccer in a shoebox, now's your chance.*

TOP 10 EIGHT-BIT GAMES

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	2	*Dizzy Collection*	Codemasters	SP CO AM
2	3	*Teenage Mutant Turles*	Mirrorsoft	SP CO AM OT
3	1	*Hero Quest*	Gremlin Graphics	SP
4	4	*VIZ*	Virgin	SP CO AM
5	14	*Multi Player Soccer Man*	D&H Games	SP CO AM
6	5	*Big Box*	Beau Jolly	SP CO AM
7	7	*Shadow Dancer*	US Gold	SP CO AM
8	8	*Supremacy*	Virgin	CO
9	RE	*Golden Axe*	Virgin	SP CO AM
10	9	*Mickey Mouse*	Sega	OT

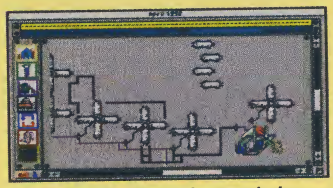
SP = Spectrum CO = Commodore 64 AM = Amstrad.
Chart compiled by Gallup. © European Leisure Software Publishers Assoc.

BEG, BORROW OR BURN

This week's at-a-glance buyers' guide. Don't go near a software shop until you've read it, you could save yourself a lot of grief.

BEG - *Exile* (Audiogenic) •Amiga • £25.99
It's taken forever, but this week you should finally be able to go into a shop and buy a copy of what the late Gary Penn described as 'the future of arcade adventures'. Don't be put off by the frankly duff graphics, this is one of the most involving games you're ever likely to play.

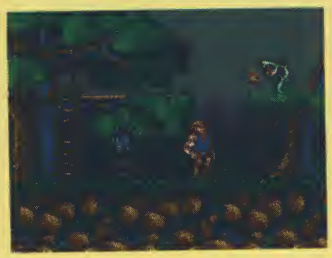
• **Exile:** *well worth £26.*



• **Moonbase:** *well worth having a look at*

BORROW - *Moonbase* (Mindscape) •Amiga • £35.99
...or 'Sim Moon'. Yes, it's another one of those colony management games, this time with a lunar setting. The whole set-up is very Sim City, but it's nicely done for people who've played the earlier classic to death. Drawbacks are the absurd price and some technical flaws which slow things down as you progress into the game, so check it out for yourself.

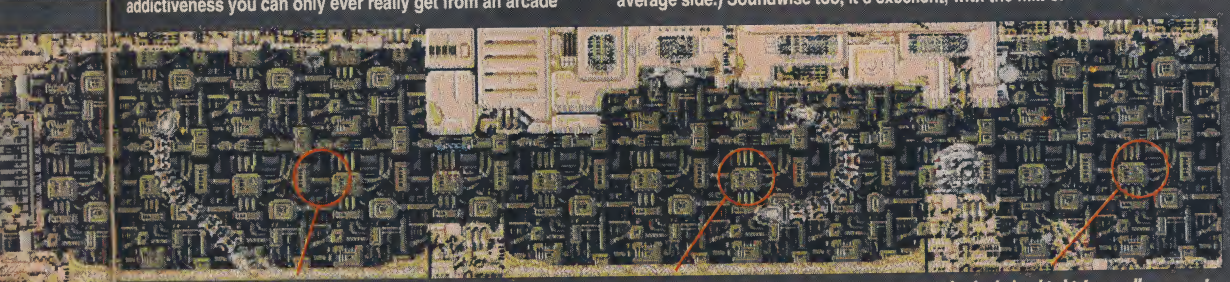
BURN - *Ghost Battle* (Thalion) • Amiga • £25.53
Ghosts'n'Goblins clones come and Ghosts'n'Goblins clones go, but not many of them ever go quite this far down into the depths. Don't make me list all the things this game's got wrong with it, just don't buy it.



• **Ghost Battle:** *well worth burying in a lead-lined box.*

Every last detail from the original arcade machine has been included in this conversion, and the graphics are nigh-on indistinguishable from the real thing. It plays like a dream too, with a tough difficulty curve and the kind of addictiveness you can only ever really get from an arcade game. (Funnily enough, the coin-op was never all that successful, perhaps due to its undeniable similarity to the first *R-Type*, but that's unlikely to be a problem for this product, as the first Amiga conversion was distinctly on the average side.) Soundwise too, it's excellent, with the mix of sampled sound effects and authentic tunes going a long way towards creating that elusive arcade feel.

Maybe the most important thing is how hard it is. I don't know about you, but I'm sick of games that you can complete in one day. *R-Type II* will test your reflexes to breaking point and if it doesn't exercise your brain too much at the same time – well, who cares? If you want to give your mind a workout, try solving the world's economic crisis. If you want to play a game, get *R-Type II*.



4 - A big nasty metal alien robot snake. You know what to do with nasty metal alien robot snakes, don't you?

5 - You might think it looks quite tricky so far, but just wait until you see what's coming up next...

6 - Don't be fooled - this bit's usually swarming with bad guys.

HATSTAND CORNER

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Quantum	15/8ms	170Mb	64k cache	£597.95
Quantum	15/8ms	210Mb	64k cache	£670.95

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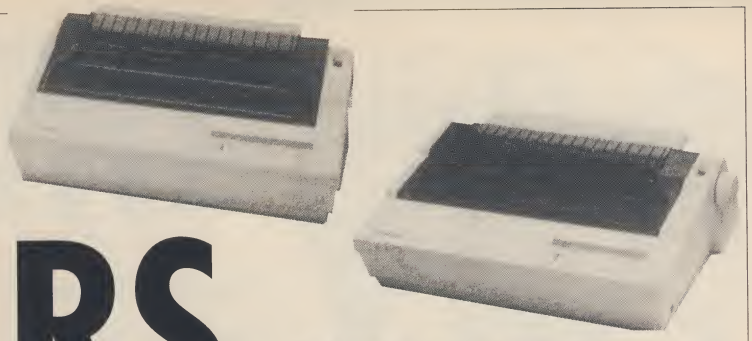

• The two new dot matrix printers from Brother might not produce the most stunning print quality, but users on a tight budget may prefer the price performance of these machines.

PRODUCT: Brother M-1309 & M-1324
MACHINE: Dot matrix printers
COMPATIBILITY: ST, Amiga, PC
FROM: Brother Industries Ltd
CONTACT: 061-330 6531

Laser printers are out of the financial reach of many, but dot matrix printers need not be a second-rate alternative. Dave Golder finds out what two new Brothers have to offer

Laser printers might well make their dot matrix ancestors seem old-fashioned and noisy, but they do have one major disadvantage: price. For many offices and home users, dot matrix printers are the only economical choice, most of them costing well under £300 as opposed to the thousands that a laser printer will set you back. However, this does not necessarily mean that dot matrix printers are cheap and cheerful second-rate machines. Refinements to pin printing technology are still being made, and new machines offering faster print speeds, wider choices of fonts and enhanced features, such as the Brother M-1309 and M-1324, continue to be launched.

IDENTICAL TWINS

The two new Brother printers look almost identical; they are the same size and weight, with the only outward differences being slightly dissimilar control panels and the badges. However, the M-1309 is a 9-pin machine offering four standard fonts while the M-1324 is its 24-pin relative with seven standard fonts. This is a very good range of fonts for the prices Brother is asking for these printers (£225 for the M-1309 and £319 for the M-1324). And the print speeds for both machines are also very impressive for such low cost printers.

The quality of printing – NLQ (Near Letter Quality) and LQ (Letter Quality) modes for the 9-pin and 24-pin machines respectively – is fairly average for dot matrix printers. You would not want to write a business letter on the M-1309, but it is good enough for printing lists of figures, tables, draft documents, etc. Letter Quality mode on the M-1324 is much better and any prospective boss receiving a letter printed on it would not be put off employing you. It is still not quite up to the standard of a good electronic typewriter, however.

Both printers are fairly compact and very rugged. One of the main advantages with dot matrix printers is that the technology is so well established – it has been around since the 1960s – that they are extremely reliable, and tend to break down rarely. While we were not able to put the Brother printer to test for any great length of time they do give the impression of being very robust, with few working parts that could be easily broken or jammed. However, they remain light and quite portable, so there's no excuse for allowing inches of muck and grime to build up underneath it.

They give the impression of being robust, with few working parts that could be easily broken

Setting up is quick and simple, helped by a very informative manual. The ribbon cartridge especially is very easy to install and you do not end up with ink all over your hands or scraping the skin off your finger tips as you would with many printers. You can only connect them to your computer via the parallel port; for connection to the serial port you will have to buy an RS-232C serial interface.

They are both Epson and IBM Proprinter compatible. Virtually all software packages will contain printer drivers for one or, more probably, both of these, so you should encounter no compatibility problems. The 24-pin printer also emulates the NEC Pinwriter.

PAPER PROBLEMS

The printers will accept both cut sheet paper and continuous feed stationery. Neither has a paper tray so, if you want to print out a series of A4 pages that do not have perforated edges, you will have to feed in each one individually. However, if you have continuous stationery set up and you need to print a single sheet, you can do so without having to take out the continuous stationery, which is very useful.

One problem with feeding in single sheets is that it is very difficult to make sure they go in straight and, once they have been fed in, there is very little you can do about it as there is no way to slacken the printer's grip on the paper.

The control panel for setting preferences such as font type, pitch size, character sets, margins etc, is a curious little affair. It consists of a series of four 'lamps' which you light up in various combinations to input your preferences. This is not exactly complicated, but a bit fiddly and long-winded, leading to pages and pages in the manual that look like a Morse code version of the Bible. An LCD screen would have been preferable, but I suppose some sacrifices have to be expected with such low-cost machines.

Overall, the M-1309 and the M-1324 are not the most refined printers ever made, but at the price present very good value as workhorse printers that will be churning out reams of figures for years to come. ■

SPECIFICATIONS

Model	M-1309	M-1324
Graphics	216x240dpi	360x360dpi
Max print speed	216 cps	216 cps
Max LQ speed	45cps	90cps
Emulations	EpsonFX-850 IBM Proprinter III	EpsonFX-850 IBM Proprinter III NEC Pinwriter
Std buffer size	8K	8K
Interface	Centronics parallel	Centronics parallel
Noise	58 dB	58 dB
Dimensions	444x318x137mm	444x318x137mm
Weight	5kg	5kg

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Prestige
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 VWXYZ[\]^_

Gothic
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 VWXYZ[\]^_

Brougham
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Roman
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 VWXYZ[ \]^

Sans Serif
 !"#$%&'()*
 VWXYZ[ \]^

Brougham
 !"#$%&'()*
 VWXYZ[ \]^
```

• On the left is a sample of near letter quality (NLQ) printout from the M-1309 9-pin printer, while the right shows the standard of the 24-pin M-1324 in Letter Quality mode.

THE FINAL PRINT OUT

FOR
- ▲ Price.
- ▲ A very good range of features and fonts.
- ▲ Robust.
- ▲ Easy to set up and get running.
- ▲ Single sheets can be printed without having to remove the continuous feed paper.

AGAINST
- ▼ Curiously and complicated menu setting system.
- ▼ Difficult to feed single sheet paper in straight.
- ▼ Print quality could be better.

COST M-1309 £225 M-1324 £319

4MB FLOPPI

The first PC compatible floppy disks offered a measly 160K - today they're pushing 4 Megabytes and beyond. But what are the processes by which such advances are brought to us? *Express* looks at the state of floppy storage as practised by the world's biggest disk manufacturers, Dysan.

Floppy disks have been around for as long as the PC – at least a decade – and like the PC, they have undergone many fundamental changes. It's a little wonder floppy disks can have a dramatic effect on a computer user's performance. Even the slightest fault in a diskette can ruin hours of work and if the signal-to-noise ratio is low, the diskette will not be easily read by another PC.

Such problems associated with floppy disks are being overcome by new processes introduced by companies like Dysan, which lead to more reliable diskettes at lower prices, thanks to a breakthrough in the diskette automated manufacturing process.

Two new standards in floppy disk storage capacity - 4Mb 3.5-inch floppies for desktop PCs and 4Mb 2-inch floppies for laptops – may soon be set and will have implications for many PC users. Current capacities have increased to 1.2 and 2Mb and all the time the reliability of floppy disks has increased substantially.

The last few years has seen a flurry of activity by Far East and North American diskette companies to develop a reliable higher density floppy disk. There were some problems in packing more density on to the same area of diskette, but these have been overcome. A few years ago similar technical problems were encountered in developing the 2Mb 3.5-inch floppy, and volume production was held back. Now 2Mb diskettes are rightly established as a market leader.

VITAL PIECE OF HARDWARE

One piece of hardware is vital to the successful uptake of 4Mb floppies – the 4Mb disk drive. The drive must be able to read and write 1, 1.2 and 2Mb diskettes and this has added to their complexity. However, they have been developed and are on the market and PC manufacturers will incorporate them into their 1991 and 1992 lines.

It is worth noting that some drive manufacturers are working on 12.8Mb and 13.3Mb floppy disk drives. In the immediate future, that is 12 -24 months, we do not anticipate that the market will absorb one new standard (4Mb) and almost immediately another (12+Mb). The 20Mb "floptical drives", which combine magnetic and optical storage technology and have been around for a couple of years without having too much impact, may kill the market for the 12+Mb drives.

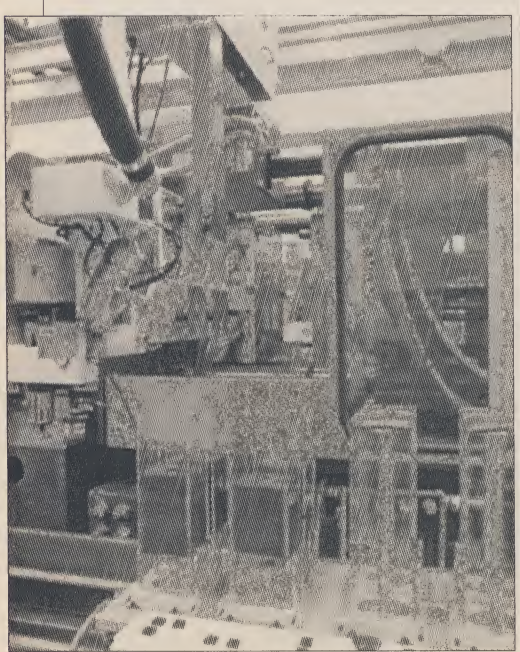
The arrival of 4Mb disks in the next 12 months will ensure that floppy disks remain the main data backup solution for the majority of PC users.

The new 4Mb diskettes may well deter some users from investing in magnetic tape systems. Magnetic tape does offer a quick back-up capability, but is more expensive than diskette storage and suffers from a lack of portability. Floppy disks do not need external subsystem (or internally fitted system) and so can be used on any compatible PC at will. Other methods of back-up require extra hardware and software to be fitted to every machine that is to transfer data or read it.

BASIC INGREDIENTS

All floppy disks come from what the industry calls "cookies" – the basic ingredient which is manufactured usually in the USA or Far East, but which would be useless as a data storage medium without a number of other manufacturing processes.

• Quality control testing of diskettes. To ensure the entire surface is error free, the area between the tracks and the area between the tracks are tested.



• Batches of diskette shells are moulded in 3.5-inch casings.

A breakthrough in automated diskette manufacturing leads to more reliable diskettes at lower prices

These processes are similar wherever a floppy disk is produced, but the techniques used in the process make a marked difference to the quality of the finished product. Instead of individually burnishing each cookie (the basic diskette), a new Linear Burnishing Process, developed by Dysan in China, burnishes an entire coated web with a series of high-speed cutters. Burnishing is a type of polishing, vital for wearing down slight irregularities in the diskette surface to provide a smooth finish. The web is also routed through wiping stations which clean away possible debris.

This new process eliminates manual handling of individual disks, ensuring higher overall quality. After burnishing, the disks are punched from the web, resulting in a more consistent burnish from disk to disk. Disk certification – the manufacturers' guarantee that the disk meets requirements for its intended use – is carried out with a new High Speed Automated Disk Certifier which spirals over the entire surface of the disk so that 100 per cent of the area is covered.

Some diskette manufacturers claim their floppy disks are 100 per cent error free. What they don't say is that only the tracts have been tested. To ensure the entire surface is error free, the area between the tracks should also be tested. An error, or fault between tracks can easily grow into a track and ruin the diskette instantantly. Testing should be done out of the diskette's jacket with a minimum handling of the disk.

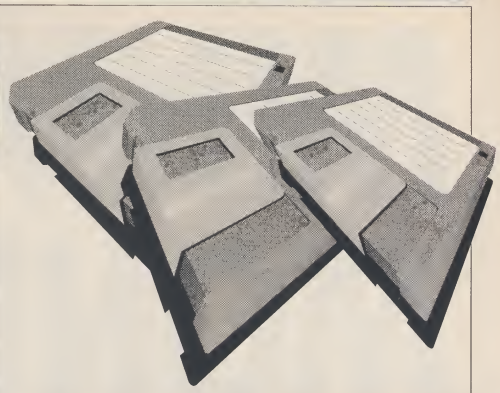
RIGID PROTECTION

The 3.5-inch diskette incorporates a more rigid plastic shell manufactured in Dysan's own moulding factory and includes a moveable shutter to give access to the magnetic media surface while protecting the media surface from contamination.

The incorporation of a rigid jacket protection and protection measures for the media surface, enables the higher storage capacity of 1Mb or 2Mb to be stored on a smaller disk. After testing, the diskettes are sent to an Automatic Disk Assembly Machine (ADAM) which carries out a process in which a roll of PVC and a roll of liner material are bonded together. The output is a continuous roll of partially punched jacket-flats bonded with two-piece liners.

This unique two-piece liner arrangement virtually

ES & BEYOND



eliminates any defects associated with interference from stray liner fibres. It also allows a more uniform primary fold from disk to disk, since there is no need to compensate for a liner at the fold.

ADVANCED PROCESSING

Another benefit is more consistent torque (torque is the force necessary to turn the disk in the jacket).

The 5.25-inch jacket processing runs in parallel to the burnishing, punching and certification of the cookies and both come together in the ADAM with the automatic assembly of the jackets with the cookies.

Existing technology requires the primary fold and edge seals to be made before the floppy disk is put into the jacket. Dysans's new process advances a stage. Rather than making the primary fold and edge seals before the disk is inserted in the jacket, the ADAM, making use of a vacuum, gently picks up each cookie and lays it in a jacket, whose edges have previously been "coined" with a hinge that defines the fold line. All four sides are then folded and sealed simultaneously.

DISK ASSEMBLY

The disk assembly process need a significantly lower level of heat to fold and bond the flaps, thus maintaining a higher degree of the original integrity of the PVC material. And tight tolerance control of edge thickness is assured because all four folds are treated alike.

The operator has a direct control on the effect of torque performance. With the ADAM the cause of any deviation from in-process torque standards can be readily identified. On leaving the ADAM, the disks are degaussed (de-magnetised) to ensure that all traces of testing are removed and the diskettes are totally "clear" of any stray magnetic influence prior to shipment.

The advantage of these new processes is that the diskettes are all produced to the same high standard:- every floppy disk is perfectly uniform and gives the same dependable performance.

• At the end of the manufacturing process all diskettes are certified for their quality.

For 3.5-inch diskettes, where much more data is packed on to the diskette, even greater care must be taken in the production process. A new coating formula. XF318, uses smaller, denser and more uniform magnetic particles which give the finished product a smoother and more consistent surface.

Three cleaning stages and 18 separate process inspections have been introduced. As mentioned earlier, world production of 3.5-inch floppies was held up because of problems associated with packing more data on a diskette; steps such as these are now giving 3.5-inch diskettes the same reliability as 5.25-inch ones.

The array of floppy disks on sale has never been greater and the advent of the 4Mb floppy will make buying decisions harder

The new processes for both types of diskette provide such quality features as excellent signal-to-noise ratio; extended media and head life; high compatibility with diverse duplicating equipment; improved registration of data; reduced chance of error due to handling or surface debris.

The signal-to-noise ratio (also known as signal response or clipping level) is very important; the industry standard is 40 per cent, but 75 per cent has been achieved and is available on some diskettes.

What does it mean? The international standards organisations specify that a diskette should be able to retain 40 per cent of the original strength of the pulse produced when data was written on to it. This is enough for the read/write head to be able to read it back, provided the diskette is not put into another PC which has a slightly different head alignment. Then, the pulse strength may be too low for the head to read. A high signal response level of 75 per cent will guarantee that this cannot happen.

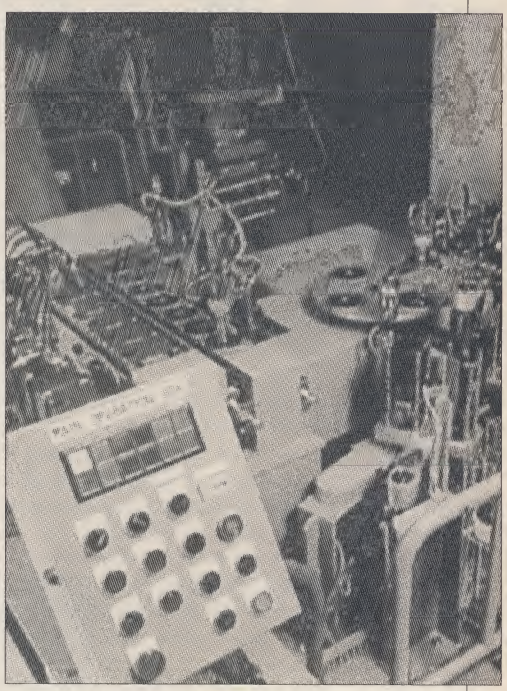
FLOPPY DISKS SUFFER TOO

All floppy disks suffer from what is called surface noise, caused by the read/write head moving over the particles which comprise most of the diskette. The particles cover the entire diskette's surface and therefore the noise is always present; in the floppy disk industry it is called the constant noise factor.

The noise is similar to the "hiss" heard on audio recording tape and in some diskettes it can interfere with the read or write pulse and write or read the wrong message. Advances in technology are reducing this noise; the barium ferrite particles cause less noise and so enable a read write head which is slightly out of alignment to write and read correctly – up to certain limitations! With more data being packed into the same space, it is advisable to keep the head within tight limits.

MAKING THE RIGHT BUYING DECISION

For the user of the desktop computers, the array of floppy disks on sale has never have been greater and the advent of the 4Mb floppy will make buying decisions harder. There is no doubt that the 4Mb diskette will eventually have a huge impact; in theory you will have to buy fewer of them, but with the increasing amount of software being generated, sales will probably be reasonably buoyant.



• 40 million 3.5-inch diskettes are assembled at the Dysan plant in China each month.

Making the right buying decision can save a lot of blood, swear and tears. In a typical business, the cost of filling a diskette with data is some 100 times the cost of the diskette. Dedicated data input personnel, operating a rate of 11,000 keystrokes an hour, would take more than 30 hours to completely load a double-sided, double-density, 48 tracks per inch, 5.25-inch disk.

There are several factors which will encourage the take-up of higher density diskettes – cost, reliability, simplicity and universatility of use; known frustrations of working with other methods of data storage and the cost adding more hardware/software to a system. ■

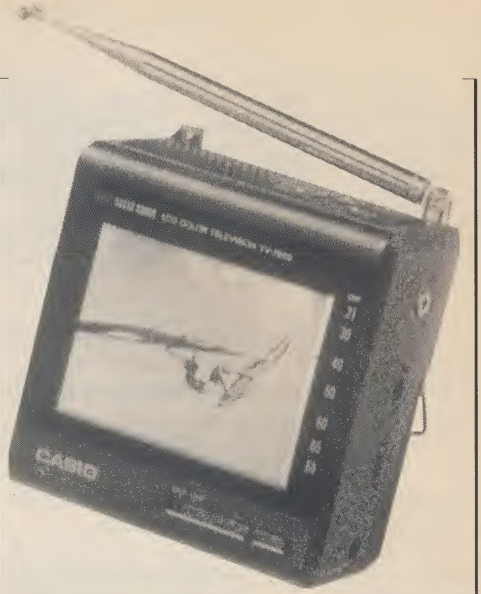
THE WORLD'S LARGEST DISK MANUFACTURER

Dysan is the largest manufacturer of floppy disks in the world. During 1990, the company transferred its new manufacturing equipment to a new factory in mainland China – at Zhuhai – which is owned by Dysan's partner, Hanny Magnetics of Hong Kong.

Production reached 20 million disks per month during the summer of 1990 and by the year end increased to 46 million.

MINIATURE MONITORS

A computer display that fits in the palm of your hand? Keith Pomfret pockets the first miniature TVs that can be linked up to your computer



• The TV7500 comes with a mounting bracket which is very useful for fixing it to camcorders when framegrabbing.

PRODUCTS: Pocket TVs/monitors
FROM: Casio
MACHINES: Any that can output a composite video signal

When you switch on your computer, chances are the display will come up on a monitor screen measuring somewhere between 10 and 16 inches. It will probably be heavy, bulky, about as environmentally friendly as an aerosol and based on old fashioned cathode ray tube (CRT) technology.

This somewhat ungainly way of viewing your output is fine on the desk, but if space is at a premium or weight and size are important due to portability considerations, lugging a heavy mains powered monitor around is simply impractical.

ALTERNATIVE TECHNOLOGY

An alternative to a CRT display is the flat LCD type of screen found on lap top computers. There are companies offering such screens as stand alone products but these are mono, expensive and usually mains powered.

A couple of years ago Casio teased our imagination with a pocket colour TV; the LCD display was a bit blocky but the most important thing was that it showed what could be achieved. It was the size of a small transistor radio and had a postage stamp-sized screen.

Unfortunately, as well as being unsuitable as a monitor in terms of screen definition there was also no way of receiving a signal other than via the telescopic TV aerial.

The next generation of Tiny TVs had better resolution but still lacked the requisite external connectors. With its current range, however, Casio has finally provided mini-TVs with 3.5 mm jack sockets to allow for a composite video input.

Part of Casio's rationale behind providing this composite port is to allow the TV sets to be used as a video monitors. Indeed, one of the Casio models comes equipped with a mounting bracket and stand to mount the TV and a video camera or camcorder together

• Though just a couple of inches wide the TV500's screen is fine for many action games.

COMPACT DISPLAY

The best news for computer enthusiasts, however, is that two of the models are suitable for being used as monitors. These are the TV-500 and the larger TV-7500 that comes with the mounting bracket. The TV-500 has a 2-inch screen and the 7500 has a display that measures 3.3-inches.

The signal input is composite video via a mini-jack and any computer capable of generating this signal, or, for that matter, having its RGB signal combined into composite video, can be used with these mini-TVs. For the purpose of the review we used an Amiga 500 with a Commodore TV modulator attached and took the composite signal from the modulator.

Shoot-'em-ups, action games and games with large, fast-moving graphics come across very well on the Casio TVs

With screens as small as those on the TV-500 and TV-7500 it would be ridiculous to attempt to use them with application software such as word processors, spreadsheets, databases and DTP. Even with the highest definition, a text display of 80 columns by 45 lines would pale into a blur on such a small display.

However, hand held consoles such as the Game Gear and Lynx have shown that it's possible to play colourful action games on small displays and, indeed, shoot-'em-ups, action games and games with large, fast-moving graphics came accross very well on the Casio TVs. It was only software involving precision placing of small objects, like *Klax* and *Tetris*, that proved a strain on the eyes.

VIDEO PRODUCER

Of more practical use, though, was the ability to connect the mini-TVs to a variety of video equipment as well.

Digitising pictures and graphics, genlocking and snatching frames from video have become possible with the current generation of computers. One of the problems you can encounter when connecting several video sources to the computer and then displaying the sources and the combined signal is that you can end up with a wall of expensive colour monitors, all gobbling expensive electricity while frying you in a static bath of electromagnetic radiation.

Using four of the Casio TVs along with a standard Amiga monitor we were able to set up an extremely compact bank of source monitors. This has the advantage that all the sources can be seen simultaneously and, since the four casio TV stood comfortably on top of the full-sized monitor, they don't take up much room.

Two TVs were used for incoming video signals, one TV to monitor the clean computer picture, the main monitor displayed the combined picture and the fourth casio set monitored the final output. Using a simple video mixer and the bank of five screens it was a simple matter to control the overall operation.

When filming live action and grabbing it on a computer using a digitiser or frame grabber the mounting bracket that came with the TV-7500 is indispensable as it can be fixed firmly to the side of the camcorder. The composite output of the camcorder can be fed to the TV-5000. Thus, from a desk, it is possible to get a camera's eye view of what is going on without standing up and peering through the keyhole of the tiny black and white viewfinder.

In other video operations, such as genlocking, it is useful to use one of the Casio TVs as a second monitor so that you can view the raw video picture alongside the processed image.

ARE THEY WORTH IT?

The Casio TV-500 and TV-7500 are a useful pair of extra composite monitors and provide a simple cost effective solution if what you need is a display on which to play games or preview video work. They'll never be much use with application software because of the restricted size of the screen, but the quality of display and the screen refresh rate were good enough for action work. ■

FOR AND AGAINST

FOR
▲ Fills a gap in the market
▲ Compact and well-specified
▲ Can be run from the mains or batteries

AGAINST
▼ Display too small for serious work
▼ Needs RGB/composite adaptor with some machines
▼ Display is prone to reflection

COST
TV-500: £119.99 or less
TV-7500: £174.99 or less

192 CPS DRAFT 9 PIN

SEIKOSHA SP-1900

- *Best Cost Performance*
- *80 Column Print Width*
- *192cps Draft @12cpi (Elite)*
- *48cps NLQ @12cpi (Elite)*
- *1K Printer Buffer*
- *Epson FX850 & IBM Pro II Compatible*
- *Pull Tractor & Bottom Feed*
- *Graphics Resolution - 144×72dpi*
- *Parallel Centronics Interface*
- *Paper Parking As Standard*
- *FREE Starter Kit*

REF: PRI 8190

RRP £210.33
STARTER KIT £29.95
TOTAL RRP: £240.28
SAVING: £93.40
SILICA PRICE: **£146.88**

£125
+VAT = £146.88

192 CPS DRAFT 9 PIN

SEIKOSHA SP-2000

- *80 Column Print Width*
- *192cps Draft @12cpi (Elite)*
- *48cps NLQ @12cpi (Elite)*
- *Large 21K Buffer*
- *Pull Tractor & Bottom Feed*
- *Graphics Resolution - 144×72dpi*
- *Paper Parking As Standard*
- *FREE Starter Kit*

REF: PRI 8200

RRP £233.83
STARTER KIT .. £29.95
TOTAL RRP: £263.78
SAVING: £100.45
SILICA PRICE: **£163.33**

£139
+VAT = £163.33

240 CPS DRAFT 9 PIN

SEIKOSHA SP-2415

- *Good Cost Performance*
- *136 Column Print Width*
- *240cps Draft @12cpi (Elite)*
- *50cps NLQ @12cpi (Elite)*
- *Tractor & Bottom Feed*
- *Graphics Resolution - 240×144dpi*
- *Paper Parking As Standard*
- *FREE Starter Kit*

REF: PRI 8215

RRP £376.00
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- *80cps NLQ @12cpi (Elite)*
- *Large 44K Buffer*
- *Pull Tractor & Bottom Feed*
- *Graphics Resolution - 360×360dpi*
- *Paper Parking As Standard*
- *FREE Starter Kit*

REF: PRI 8292

RRP £393.63
STARTER KIT .. £29.95
TOTAL RRP: £423.58
SAVING: £189.75
SILICA PRICE: **£233.83**

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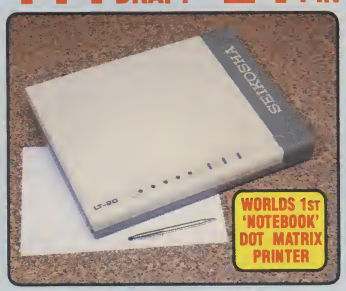
144 CPS DRAFT 24 PIN



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- *Parallel Centronics Interface*
- *FREE Starter Kit*

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SILICA PRICE: **£351.33**

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324 CPS DRAFT 24 PIN

SEIKOSHA SL-210

- *80 Column Print Width*
- *324cps Draft @12cpi (Elite)*
- *108cps NLQ @12cpi (Elite)*
- *5K Printer Buffer*
- *2 Bin Cut Sheet Feeder*
- *Graphics Resolution - 360×360dpi*
- *Plug-in Function Cards*
- *FREE Starter Kit*

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SEIKOSHA SL-230

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- *277cps Draft @12cpi (Elite)*
- *92cps NLQ @12cpi (Elite)*
- *9 Fonts As Standard*
- *2 Bin Cut Sheet Feeder*
- *Graphics Resolution - 360×360dpi*
- *Plug-in Function Cards*
- *FREE Starter Kit*

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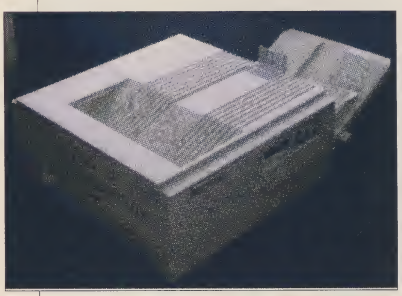

• The Acer LP76 laser printer worth £1,200 is up for grabs, so give this competition a go!

Here's your second chance to try your skill at winning a fabulous Acer Laser. In case you missed last week's issue, we've reprinted the questions and added a few more. Without more ado let's tell you about the prize.

The LP76 comes from UK Home Computers and is the same model that came out tops in a recent *Express* review.

The Acer LP76 is a six page a minute laser printer that emulates the industry standard HP Laserjet II. It can handle A4 paper and as a bonus the LP76 in the *Express* competition will be supplied, installed and ready to go with toner, drum, an extra memory card and a second sheet feeder to allow you to choose which paper you use without having to change the paper tray. In other words, you can have a good quality letterheaded paper in one tray for correspondence and plain paper in the other tray for the more mundane jobs. Alternatively, you could use two colours or two qualities of paper in each of the trays.

To make sure that the LP76 in the competition is ready for anything, we've added a memory card to take the memory up from the standard 512K to 1.5Mb. Applications like desktop publishing take gargantuan amounts of memory in a laser printer and the more complicated the page, the more memory and processing power the printer will need to output it.

If you don't get the printer in the competition, don't fret. UK Home Computers have ripped up the £1,200 recommended retail price so you can get a package printer and sheet feeder for only £646.50.

You'll need to send the two weeks' answers in together if you want to stand a chance of walking away with this whizzy laser printer.

Write the answers on a postcard and send them to: *Express* Laser Compo, 29 Monmouth Street, Bath BA1 2BW to arrive no later than 3 August. ■

AND HERE ARE THOSE QUESTIONS...

5) Which company's laser protocols are known as HP Laserjet compatible?
a) HP Sauce Ltd
b) Horse Power Hardware
c) Hewlett Packard
d) Henry Porter

6) Which of these is closest to a laser printer in quality?
a) Dot Matrix
b) Thermal Transfer
c) Daisywheel
d) LCD Shutter

7) Which of these isn't a kind of computer paper?
a) Tractor feed
b) Cut sheet
c) Listing
d) Andrex

8) Which is the closest technology to a laser printer?
a) A photocopier
b) A thermal neutron
c) Ford Cosworth engine
d) A steam powered radium laptop

LAST WEEKS QUESTIONS

1) What does 'laser' stand for?
a) The Queen (and God bless all who sail in her)
b) Light Amplification by Stimulated Emission of Radiation
c) Look At Beef Sausage Eaters on Radio
d) Light and Shade Engineered Raw

2) Which of the following isn't a printer?
a) Daisywheel
b) Inkjet
c) Qualcast
d) Laser

3) What is the resolution of a laser printer?
a) 300x300 DPI
b) 75x75 DPI
c) 1280x1280 DPI
d) 1200x1200 DPI

4) What firm sells laser printers at under £650?
a) Arnold Layne Washing Lines Ltd
b) Blackpool Tower Company
c) UK Home Computers
d) The National Motor Museum

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LQ 1060		959.00	**790.00**
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SQ 850		769.00	**650.00**
SQ 2550		999.00	**780.00**
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EPL 7500		1,999.00	**1,599.00**
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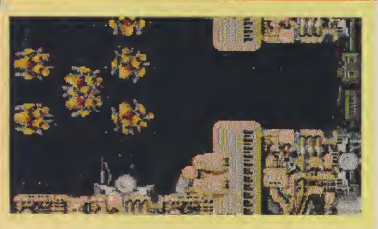

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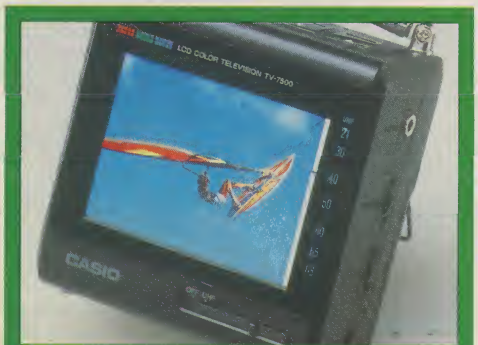

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